THE FOUNDRY

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Ramming.

H. HANSEN.

It is universally conceded that the art of ramming (that is, to ram a mold properly) cannot be described, and that no amount of eloquent explanations or appeals can transfer from one to another the ability to ram a mold right. It seems curious that a molder can ram his work right, and yet be unable to impart to others the knowledge of how he does it. I am more than convinced, however, that such is the case, for have we not all heard the foreman tell a molder and ourselves, too, to ram a mold right, have we not tried our best to do so, and have not the swells and other defects on the casting attested to our inability to comply with his request or to obey his instructions?

The ability to ram a mold right can only be acquired with practice and a very close attention to business, and some will practice for a quarter of a century and never graduate from this school. They are yet in the first reader, when others who started with them to learn the art of molding are occupying exalted positions. It comes natural to some molders to acquire this elegant accomplishment, and it is a mystery to others, why some blemish must always appear on their castings, that can be traced directly to imperfect ramming. The art of ramming can be compared to nothing better than to the art of playing a musical instrument. Everybody can play, so can everybody ram, but the result is widely different in both cases. In the first a bad result will be disagreeable to the ear, in the latter to the eye, yet some people practice playing all their lives and still play badly, and there are molders the greater part of whose existence is spent in ramming without advancing but a short distance in this respect.

It seems such a simple operation to an outsider, it seems to require nothing but muscular energy. The boy who fresh from the farm steps into a foundry, and having had a large experience in ramming the earth around fence-posts with a piece of scantling, may look upon a rammer as a handy tool for his purpose, and as he surveys the molder performing this, as it seems to him, unskilled operation, he may entertain the idea that there is nothing about it that anybody could not do. Yet there are but few who can ram a mold properly, simple as it appears, and the older a molder becomes in the trade, the more will he be convinced of this. Apparently it calls for natural ability specially adapted to this end.

Admitting, therefore, my inability to describe how to ram a mold right, and some of my friends will probably raise me, and call upon me to show my hand and say, my own inability to ram a mold as it should be, I think I may at least describe some of the ways in which bad ramming is being done.

Let Fig. 1 represent a section of a square column and let this pattern be bedded in the floor. Now, if a molder in ramming this job stands upon the edge of the floor that in the illustration is marked floor line, is he not very apt to let the rammer lean toward himself? as shown to the right at A, instead of letting it descend perpendicularly, as at C. "Keep away from the pattern," or "Don't ram too close," are watchwords among molders. Following the direction of the rammer at A, we find that if it keeps this course it will ultimately strike the pattern at C. Even and satisfactory ramming can hardly be expected in this case, and is seldom obtained. It may be awkward to hold a rammer at arm's-length, yet it should descend in the same direction as that occupied by the sides of the pattern. Who has not seen scabs on such castings as Fig. 1? They are living witnesses to the fact that the ramming was done improperly, and many scabs are caused by handling a rammer as at A.

At Fig. 2 I take pleasure in introducing to the reader an illustration of an instrument that by some people is designated and misnamed a rammer, but having special refer-

ence to the lower or pean part of same, which I beg you to examine, as it is an actual illustration from life. I believe I could retain a clear conscience and say it resembled an ax. A molder would not be considered much of a mechanic, nor would he prove himself to be such, if he started to ram a mold with an ax. Yet some of the grand institutions known as foundries will furnish their molders with the kind of rammer shown and expect neither swells nor scales on their casting. They ought to hang them up in some prominent place with the label, "To be used only in case of fire,"

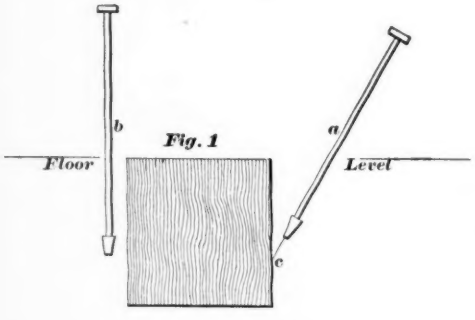


Fig. 1

or else let their married men carry them home to split kindling wood with, for they are far more useful for this purpose than the one for which they are intended.

The object for which the rammer is used is to pack the sand evenly underneath it as it is used, and not to divide the sand on both sides of it and leave holes behind it, which would be the correct shape for a wedge. I have seen a statement somewhere to the effect that if a molder wished to ram nice and evenly, four inches of sand was all that should be attempted at a single course, but if you are wearing yourself out ramming with a tomahawk you can safely increase this to four feet, and if you don't look out then you will disfigure the pattern, as the loose sand will not offer much resistance to being penetrated by these arrow-shaped monstrosities.

It is aggravating to labor with such a tool, it will make hard spots, it will make soft spots, it will make the joint of your mold look like a bird's-eye view of the Allegheny Mountains, it will spoil with the least contact the best patterns, and there is an attractive force existing between a sharp rammer and a pattern which renders it well nigh impossible to prevent contact.

I consider such a rammer a menace to a foundry, a producer of bad castings, for as long as it is active it is injurious to good work, and if your foreman is not enough acquainted with the undesirable results it

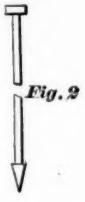


Fig. 2

causes to remove this deformed object, you will undoubtedly be justified in resorting to fumigation. To explain this last word I will relate a short story, which having direct connection with this article, you may consider as pure reading matter, and incidentally it will acquaint you with the process of fumigation as it can be applied. It fell to my honor to secure a job for a limited time in a small shop in the West—one of these foundries that are started with what is left of another foundry that has burned down, and as such shops only run spasmodically their proprietors find plenty of time to visit

Fig. 3

neighboring towns and share with other foundrymen the happiness of being sold out by the sheriff. My employer seemed to have been very active in this respect, for he had the grandest variety of old foundry tools ever collected under one roof. There were plenty of tools, every one was a veteran, all were maimed and entitled to be retired, but our friend the foundryman seemed to hold on to them for old acquaintance sake and insist that they were good for a number of years yet. The molders differed with him in this, but he remained obstinate. There were rammers such as I have described, and after hitting the wind all day with one of these the molder would wish for no extra exercise; there were riddles that were

riddles in name only, shovels that could be rolled up like parchment, a choice aggregation of everything pertaining to the foundry in the same stage of uselessness. The old man expressed himself as confident that we had no reason to wish for anything and that with everything at our command we should be happy and do a good day's work. After taking an inventory and classifying the curiosities we unanimously decided that this location was in the wrong part of the country to found a Smithsonian Institute, and by a vote of 3 to 0 we favored the extermination of the ancient implements on the premises.

Whenever a heat was taken off, first one molder and then another would satisfy himself that the old man was unsuspecting, and

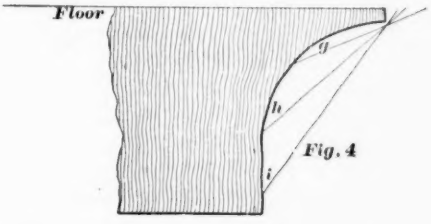


Fig. 4

then make a bolt for the charging platform with a couple of old riddles, a rodden flask or anything else that was doomed to destruction, and deposit them in the cupola, where a few shovels of coke would soon obscure them, then he would return to the foundry and help pour off what metal was left in their carcasses. Several times we thought we had better dispose of the most outlandish crane ever seen after the same fashion, but the fact that the cupola was too small to receive it deterred us.

Maybe we made the iron a little hard, maybe we helped bung up the tuyeres, we did not care, we were doing our best to cause the effectual disappearance of tyrannical tools, and this is not the only shop that is full of that kind. We would have succeeded if the shop had kept running continuously for fifteen years longer, but to the last we never relaxed our vigilance, we kept right on disposing of sacred relics; in fact we fumigated. We adopted the only course open to us. In making away with a large assortment of ancient tools and antique foundry bric-a-brac, we made a silent but very forceful appeal for something better, and it may be added that in a majority of cases it is a very successful way of applying for redress. If anybody should inquire into the justness of this treatment, let him first consider if there is anybody injured thereby, financially or otherwise. Would not a large number of foundrymen be actually benefited if their shops were relieved of an overdose of hysterical appliances?

A rammer is a tool just like any other, and should be used only when it is in a proper condition to perform the duty for which it is intended. A sharp rammer causes molders to apply epithets and all the other disagreeable things that follow in their wake. There is no excuse for employing a bad rammer, remove it.

At Fig. 3 we will start discussing another subject connected with ramming, and there are a lot of us who have often before left the first syllable off, and contented ousselves in this connection with pure cussing. The subject which we will consider is the conditions under which a pattern is removed from the sand, or the sand from the pattern. It is plainly a case of separating one body from another, the sand being one, the pattern the other. The ease with which we can do this depends upon the amount of friction and adhesiveness existing. The nature of the pattern, which is sometimes made of an unsuitable material or improperly finished, will cause the sand to adhere, or this may be assisted by a too liberal use of claywash or water, but this factor is small compared with that of friction. Some molders will say when they have a bad lift, "It must be rammed harder," but in this I nearly always differ with them. Submitting Fig. 3 for an illustration, where it is desired to lift out the central portion D, this of course involves the separation of this body from the sides of the pattern, E F. Now, the harder this body of sand is rammed, will not the friction existing between it and the sides of E F be correspondingly increased? Will it not require a greater force to separate these two bodies? and if it requires a greater force to cause a separation are the chances not lessened for a clean lift? I believe instead of ramming it harder, we should ram it lighter. Will a gear wheel draw nice if you ram the teeth solid? Then why should a thousand and one other things we make do any better

with hard ramming? The principle involved is just the same whether we remove the pattern or the sand. I think everybody will admit that the softer a mold is rammed the easier it is to withdraw the pattern, then if we ram a mold just hard enough to hold together should it not lift best? I believe so. The way molders have when a stickdown occurs, to resort to ramming a mold like a rock, though they sometimes secure the lift, and often a casting for the scrap heap also, is simply another illustration of the fact that the very thing molders often desire to accomplish they actually prevent by their own actions.

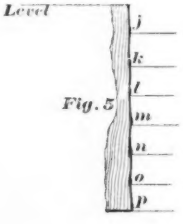


Fig. 5

I have watched stove and hollow ware molders secure the nicest lifts time and again, in places where the ordinary jobbing molder would have to do considerable patching. Why cannot the rest of us learn the secret of getting good lifts, when it lays in the ramming more than in anything else? Why ram everything like a brick, unless there is a necessity for it?

Fig. 4 shows a kind of pattern, to ram which properly, when bedded in, requires considerable practice. How much more difficult than Fig. 1. How easy in this kind of underhand ramming it is to leave a soft spot, how easy to make a hard one. In ramming such a job a molder is practically groping in the dark. The lines at G H I show some of the different directions in which the rammer must be handled, and which without further explanations convey an idea of the difficulties which beset the molder in ramming such an object perfectly.

Fig. 5 represents a section of a pattern of considerable depth and the lines J K L M N O P show as many courses of ramming. Who of us has not seen this kind of work after being cast having what appeared as rings, a number of swells corresponding to the number of courses of ramming? That is, some molders would have them and some again would ram castings of great depth without leaving a single mark to denote the number of courses. There are molders who in ramming such a job find that the pean of

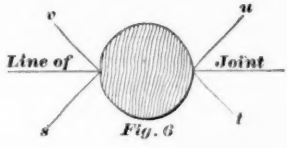


Fig. 6

their rammer does not leave the surface of the sand solid enough to suit them, and believing that it will never do to apply more facing sand until everything is solid, they tuck all around the pattern with their hands or else pound it down with their butt rammer. Everything being now solid another course is completed in the same way. Now, if you will observe, every swell will appear just above the place they tucked so well or butted off. The fact of it is that this very thing of changing from peaning to tucking and butting in a space immediately surrounding the pattern is the very worst form of uneven ramming. It is another illustration of molders preventing what they want to accomplish.

Let Fig. 6 show a cross section of a pipe, in molding which it is customary, in turning the drag over and removing the follow board, to find the joint of the mold soft along the joint line Q R. Upon lifting off the cope this will be found soft along the same lines, unless special care has been taken to prevent it. The reason is the same as in Fig. 5 and can be avoided by using the rammer on a light course of sand, as shown by the direction of the arrows S T U V.

The best thing a molder can do towards ramming his work right is to sidetrack all other business in which his mind may be temporarily engaged and let it wait till he gets through. Divided attention cannot be consolidated with good ramming.

I did not receive my copy of THE FOUNDRY for February. Will you please send me that number, as I cannot afford to be without it. It is the best trade paper published.

Yours truly,

JAS. A. LOWESBURY,

Chicago. Electrical Engineer.

Flasks.

In an article published in the January number of The Foundry, I endeavored to show some ideas relative to the construction of flasks, embracing the most fitting manner, to build them with an eye to wear, durability and practicability, and believe such study should be the ambition of every foundryman. They should be adapted to the particular quality of work they are costructed for, and built to reduce the amount of labor necessary to produce a given casting; and in this particular there is an immense field for improvement in nine out of ten of all our foundries.

There will always be in every shop a certain number of flasks that are built for anything and everything, and will be necessary for jobbing and general work, which, of course, it will not be possible to adjust and fit to such work with the precision necessary for flasks made for a special grade of work, but even here many improvements can be made to facilitate molding. A number of round iron flasks ranging from twenty-four to sixty inches in diameter, a size for every six inches, are one of the most useful improvements in a foundry. There should be drags made of different depths, say 6, 9 and 12 inches, and by this means any depth of drag desired can easily be obtained, and save ramming up large quantities of sand. Very often they can be used for dry or green sand, and stand wear and rough usage better than any form of flask built. Their cost of making is also very slight. Nearly every shop has a few standard sizes of pulley rings, and with them and a few bar patterns the flask can be made complete, or if the pulley rings are missing, a short piece or a segment of the circle will easily take their place. It is surprising how useful and how many different jobs a round flask will fit to an advantage.

Where square wooden flasks are made for jobbing work, especially in the smaller sizes, it is well to make the drags not over six inches deep, and have a number of frames made the size of the flasks, from two to four inches deep, and fastened in the corners, as shown in Fig. 1 of THE FOUNDRY, January 10, 1895. They can be easily used or left off at will, and often entail quite a saving in handling sand.

Many such little items can be made to assist in constructing flasks for jobbing work to great advantage.

When a shop is running on specialties, or has regular contracts, or business that requires the constant duplication of certain castings, suitable rigging can and should always be made to suit it, and if intelligently designed and constructed, will always abundantly repay the outlay. No matter what it costs, if it is the best thing brains and experience can produce, the investment will be sure.

To try and save a few dollars in the rigging to make a thousand or ten thousand castings from one pattern, when the saving is at the expense of the utility of the fixtures or rigging, is a miserly and sadly mistaken policy.

It only takes a few pounds of bad work, or a few pounds less produced per day, to pay for all the possible difference between the poorest and the best of flasks.

Molders appreciate good rigging, whether they voice their sentiments or not, and would often rather stay in a shop where they made fifty per cent more work, than exist in one with poor appliances. Besides increasing the output, it relieves from their minds the anxiety and uncertainty that is always uppermost when compelled to use flasks that are shaky or doubtful as to their stability.

The molder who has to ram up a flask as large as a barn to make a two-foot grate bar in, is just about as dissatisfied as his employer when he sees the accomplishment of his day's toil; or again, the molder who uses a flask that is too small or shallow, and the casting runs out or shrinks because the cope was too shallow, or cuts and scabs because it was too close to the bottom board, feels as discouraged as the foreman, and finds a suitable excuse, and often a true one, by saying, "No one could make good work in ladders or cigar boxes." This is too often true, and hundreds of tons of castings are lost annually simply through inferior flasks, or ones not fitted or adapted for the work. Often a first-class workman will make good castings in such rigging, but all molders are not first-class, and the wise man simplifies and improves his fixtures so a second rate molder can make first-class work, and diminishes his chances of bad work.

No money was ever made by being stingy, or over economical, in the number of flasks a proprietor thought sufficient for use in a foundry of given size. As near as possible every job that is regular work, or re-

quires frequent duplication, should have a set of flasks made for it, and kept intact for that job alone, even though other jobs in the shop will suit the same flasks, with a little alteration in the bars.

There is no economy in cutting the bars out of a set of flasks to make another casting in them, and in a few days have to rebar it back to its former condition. A few such changes cost as much as a set of new flasks, and you have nothing to show for it except impaired flasks, and a bill for lumber and time, and no collateral in view.

It will not do to let the rigging go with bars all cut out and mutilated, and expect rapid production, so constant repair is necessary when such a system is followed.

Another thing is true; there is no more expense to a large stock of flasks than to a small one, and as I have just shown, not so much.

With a set of flasks for everything that may require anything like constant duplication, they will only be used for that alone; they must be built to stand the work, not so close that they will be burning up the boards and crowding the molder to secure them, and keep them from running out, nor any larger than is absolutely essential to safe work, and at the same time strong and substantial enough to require very little repairs.

Every time a flask is used shortens its life; if you have more flasks you use each one less, so their life is the same, plus the damage done in alteration, if you are always changing them to suit different castings.

Delay to molders is always caused by such practice. When a man has a set of flasks taken to his floor, with the bars cut out for some other job, he either has to wait while some are being rebarred, has to use four times as many gaggers, or spends some little time driving them full of nails, which will be a source of trouble and profanity, to the man who uses them next.

The writer thinks the assertion safe that the first law of rapid production in a foundry is flasks and bottom boards in perfect condition, and kept together in the flask yard in a careful and systematic manner. They should never be thrown down on the ground and allowed to rot in the summer and freeze fast in the winter. Care should be taken to put old pieces of timber or bricks or anything under them that will keep them from the ground.

In the case of large flasks, the bearings they are set upon should be leveled up, as sun and rain will warp them a great deal more rapidly if they are resting on two corners, or in the middle and one end. Every set of flasks, their bottom boards, or any other rigging that goes with them, should always be kept carefully together. It will save many hours' time.

In making flasks for special work the practice of building them square and with straight joints is often followed, giving the molder all the work to do in parting or, at least, if he has follow boards, to lift many difficult places.

Time will be saved by making flasks to suit the shape of the casting, be it five-sided or in the shape of a triangle, and making the joint to follow the form of the parting. It will greatly simplify many jobs, and reduce the amount of risk of bad work. Numberless arrangements of this character can be made. The writer has some flasks that are twelve inches deep at one end and not over six at the other. They are made to suit the casting. That is what flasks are generally made for, but from some examples of flasks he has seen made in different places, and the observations made by foreman and molders, one would be led to think the castings should be made to suit the flasks.

This is more easily accomplished in iron flasks than wooden ones, but even there the carpenter can with very little extra work and no extra lumber, follow the same plan successfully.

The great trouble is, we are not progressive enough in this line. Enter four foundries out of every five, and you will find molders using rigging for one casting that was made for another. You will see them putting one-third more labor and time on their work, and you will see more bad work made through unsuitable fixtures. You will also see foreman and employer trying to drive more work from their men, in order to compete with some firm that has the best improvements money can buy.

You will ask them, "Why don't you make flasks for this? Why don't you put better appliances in your shop, and improve your plant to keep pace with the march of progression and low prices?" The answer will be, "We can't afford it; our business is not

large enough, and does not pay well enough."

How firms can be so miserly and narrow minded, I cannot understand, and they that follow the "too poor" principle will never make their business pay, enlarge or advance a single step in the progression of the age. This is a faithful picture and one worthy the notice of all, and shows what notions of false economy prevail among many of our representative foundry men.

High Grade Decorating.

A writer in a recent number of the "American Machinists" gives an interesting account of how he once prepared a casting for exhibition purposes. He says:

"In a recent number you suggest that it is difficult to judge of the quality of foundry work by seeing the product of a "paint" shop, or words to that effect. To this I beg leave to add, that it is equally difficult to judge of the quality of foundry work, after the work has passed through the machine shop, but has not yet been through the paint shop. I can go even further, and say, that a machine-finished "show casting" need not bear any evidence that it was ever in a machine shop at all. Forty years ago, my 'old man' set me to finishing a 3-inch flat-bottom journal box, all over, for a "show casting,' the requirements being that the runners, risers and sand scale should be retained intact.

"The finishing of the 3-inch journal box, so it looked as if just from the foundry, was as follows: The uncleaned castings were taken to the shop, where the runners were cut off, leaving stumps about 1½ inches long, and the riser (on the bottom casting only) protected by a close wrapping of twine. Fitting together, boring, turning, chipping and filing followed. Then scraping to take off file marks, and stoning with oil to take off scraper marks, were in order. Next came boiling with potash, to take off the oil; sweating in a charcoal fire, to take off the 'machine finish;' washing in dilute acid, to take off the 'fire finish,' and rubbing with a woolen cloth, to take off most, but not all, of the acid, and the castings were ready to receive the coat of scale. Dilute white shellac was applied and dusted with burnt foundry sand. This was repated until the scale was thick enough to suit the general conditions of the foundry practice.

In a few days the remaining acid got in its work, the scale began to fall off, and the finest specimen of foundry work ever made was ready for exhibition. I did not invent this process, and therefore may say that those specimens would have deceived Tubal Cain himself, had he lived long enough to have seen them."

From the Aluminum Watch.

Aluminum foundries are increasing everywhere, and one which is doing extensive wor is that of the Pure Aluminum Novelty Co., of Newark, N. J. This firm recently cast an aluminum caldron which is one of the largest castings ever made in the meal. It is 33 inches in diameter at the top, 20 at the bottom, is 26 inches high, and weighs 68 pounds. It is used in melting tallow for candles, and is the first one of an order for a dozen of the big kettles. The candle manufacturer ordered aluminum caldrons because they do not discolor the allow as iron or brass ones do. The Pure Aluminum Novelty Co. makes aluminum novelties of every description. The goods it has turned out in both the spun and cast form have ranged from trinkets to the ponderous caldron. Among the firm's own specialties is an hypodermic syringe case, which is mighty popular with physicians. Another specialty is cast aluminum numbers and letters for houses. The firm has been in the business for four years, and is now looking for a larger factory.

L. D. Kingsland.

Mr. Lawrence D. Kingsland is Vi e-President for the State of Missouri in the National Association of Manufacturers, and in that position ought to be an important factor in making it a success. He was born in St. of age entered the Military Institute at Nashville, Tenn.

On the outbreak of the war Mr. Kingsland's sympathies were naturally with the South. While at Nashville he had studied the question conscientiously, and had come to the conclusion that the South had justice on its side. Hence, in December, 1860, he enlisted in the Confederate army and served throughout the entire war. He then entered the house of which his father was senior partner, and was ultimately made a member of the firm. In 1887 the Kingsland & Doug-

las Manufacturing Co. was incorporated, with Mr. Kingsland as its President, and is one of the principal founderies in that city.

He is certainly a representative man, and he has been connected with an immense number of important works in St. Louis. He is President of the Citizens' Smoke Abatement Association, and was for several years President of the Ht. Louis Spanish Club. This latter institution, designed to strengthen the relations between St. Louis manufacturers and exporters and the business world in the Spanish American republics, has introduced St. Louis-made goods into hundreds of cities, and has increased the shipping returns from this country many points per cent. Until the club agitated the question, the importance of the Mexican and South American trade was entirely lost sight of. Since then the matter has been regarded from a more common-sense stand, and President Kingsland, who has made several tours through Mexico himself, is largely responsible for the improvement.

L. D. KINGSLAND.

When the St. Louis Smoke Abatement Association was formed, the leaders in the movement recognized in Mr. Kingsland the very man for the presidency, and he was elected to the office unanimously. No city has done so much in so short a time to rid itself of the smoke nuisance, and the excellent management of the President of the Association is mainly responsible for the good results. Mr. Kingsland was also an active member of the Executive Committee of the Autumnal Festivities Association during its busiest days; is a director and enthusiastic supporter of the Exposition, and also does good work in connection with the Tariff Commission, and the Business Men's League of St. Louis.

He has made a large number of trips into Southern Texas and Mexico, selling very large numbers of bills of goods, and introducing the specialties of his firm into new territory. Mr. Kingsland is above the average height and is a man of fine presence and very pleasing address. He will be heard from in a very practical manner in the councils of the National Association.

The B. F. Sturtevant Co., who have occupied part of the store at 91 Liberty St., New York City, for several years, have leased the entire store and basement at 131 Liberty St., New York City, and will move on May 1st to the latter address, where a full line of their Blowers, Exhaust Fans, Forges, Steam Engines, Hot Blast Heating and Ventilating Apparatus, Steam Fans and appurtenances will be displayed and kept in stock for prompt shipment.

The Berlin Iron Bridge Co., of East Berlin, Conn., are building an extension to the casting shop of the Waterbury Brass Co., at Waterbury, Conn.

The new foundry which the Jackson & Woodin Mfg. Co. are now building at Berwick, Penn., was designed by the Berlin Iron Bridge Co., of East Berlin, Conn.

A writer in a recent number of the "American Machinist" gives an interesting account of how he once prepared a casting for exhibition purposes. He says:

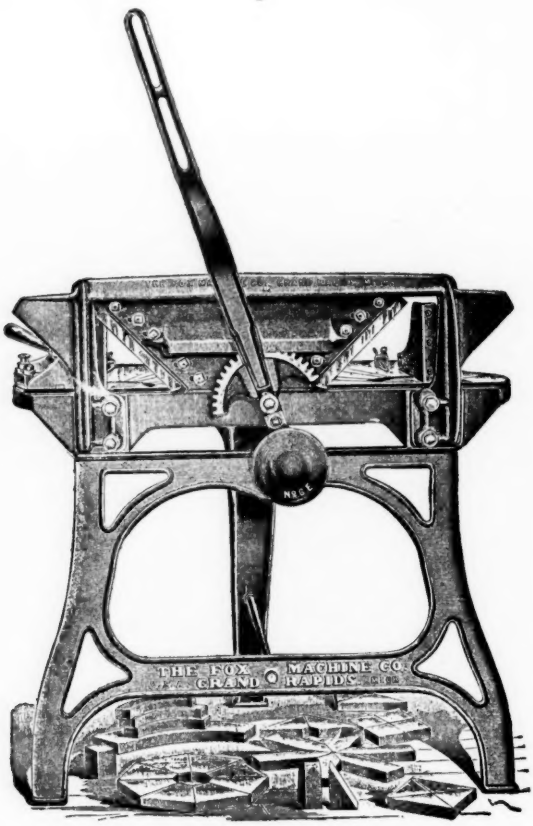
ALL FOR 5c.!

The Origin of the Daisy, The Races on the Neva, The Players at Chess, Etchings Afterwards, The Man Who Was Never Found, An Original Assessor, and other sketches are to be found in the last issue of the Chandee Book, published by the Passenger Department of the C. H. & D. R. R. Only a few copies left. Send in your address and 5c, and a copy will be mailed you same day order is received. Address Chandee Department, C. H. & D. R. R., Cincinnati, O. All for 5c.!

A NEW PATTERN TRIMMER.

A New Pattern Trimmer.

We give a more than usually large amount of our space in this issue to the Universal Trimmer, illustrated herewith, not so much because the trimmer itself is a new machine exactly, but because its many merits and the wide range of wrok it can be made to do are both imperfectly understood. Also for the reason that the one shown is in many respects new and it is claimed an improvement on all others. We believe the Fox Machine Co. claim to be the pioneers in the manufacture of these machines and have sold upwards of 7,000.



The one illustrated is known as the style E, has all the improvements of the other machines, with the addition of a gauge having a greater angular movement, moving through 105 degrees. This gauge is pivoted on the under side of the bed directly under the line of the knife and always in the same position.

The taper pin stop locates the gauge quickly and accurately at any of the angles, effecting a large saving of time.

The eccentric lever clamps the gauge at any angle. The E Trimmer has a large bed; stands on its own feet; is a very heavy machine, yet is easy to handle as the adjustments are convenient and quickly made. The cut is made quick, as one-half revolution of the lever gives a full stroke of the carriage.

I think The Foundry a very good journal for the advancement of foundry work, and my foreman appreciates it very much.

J. J. BATMAN,
Sunbury, Pa.

The Kewanee Foundry, Kewanee, Ill., was totally destroyed by fire January 3.

The Memphis Car & Foundry Co., so long closed down, will shortly reopen with a full force of men.

A TECHNICAL JOURNAL DEVOTED TO FOUNDRY INTERESTS.

THE FOUNDRY

Published Monthly by

"The Foundry Publishing Co."

DETROIT, MICH.

JOHN A. PENTON,

EDITOR AND PROPRIETOR.

DETROIT, MAY, 1895.

Entered at the Post Office at Detroit, Mich., as second-class matter.

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IF YOU FAIL to receive your paper promptly, please notify us.

THE FOUNDRY is issued promptly on the tenth of each month, and will spare no endeavor to furnish valuable news and information to those interested professionally or incidentally in molding, melting, mixing of metals, foundry management, etc. Persons connected with any of these lines of industry will confer a favor upon the Editor of this Journal by sending him news from their section of the country pertaining to the foundry interests, particularly individual theories and experiences of practical value.

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Publishers' Agents, Detroit, Mich.

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The Trade Outlook.

From a great many sources and a variety of directions we continue to hear what are comparitively most encouraging reports, and we believe the gradual improvement so noticeable for some time past has not in the least abated. In these days when foundrymen buy iron for immediate use only, no better criterion of the condition of the foundry business could be quoted than the amount of pig iron sold, and we might say, melted.

Pig iron dealers everywhere report an increased business and this has such a staple appearance as to warrant the belief that the increase of price aggregating almost if not quite fifty cents a ton will be maintained for some time to come. Buyers generally have been inclined to regard the advance as but temporary and unlikely to be permanent, but the indications at this date point to an advance rather than a decline.

A large number of the leading furnaces running on standard brands of foundry iron are sold a long distance ahead, and we have heard of several who are refusing good business.

The price of coke shows no signs of receding from its position of last month, and with the present steady and conservative advance in prices foundrymen ought to begin to think seriously of getting something like value for their product. They cannot pay more for iron, fuel and labor and sell castings at last year's prices. The jobbing and machinery shops are doing fairly well in some lines, those at work on motive power of various kinds especially seem to be having the best of it. Agricultural shops have had a good season thus far and are preparing for a good trade in harvesting machinery of all kinds, while the stove shops are accumulating large stocks and doing business on "faith;" but that is always the case at this time of the year.

Carwheel shops do not seem to be enjoying any boom, and car plants appear to be getting gradually busier.

All things considered this months is the most promising one the trade has seen for some time.

What Next?

The country has hardly recovered the

shock it received when it read in the columns of the daily papers that the Carnegie Company had voluntarily raised the wages of its army of coke workers in the Connelsville region, when we are again notified that all the workers in its many blast furnaces, rolling mills and steel works are to receive a raise in wages of 10 per cent. to date from June 1st.

This is so much unlike the Carneigie Company that the average reader is at a loss to exactly determine in his own mind why a company that has hitherto been apparently so regardless of the rights of employees should become suddenly oo magnanamous. This increase must in the aggregate amount to many thousands of dollars per day, and whether done to in a measure secure reinstatement in the popular favor or because by setting an example that their competitors must follow, they do much toward adding the weight of their immense influence to strengthening the general belief that good times have come, we know not. It may be, of course, that the stockholders and directors feel that it would be unfair to withhold so much of their profits and desire to do the right thing and divide, in which case they deserve the thanks of the whole country for setting an example that will be felt in every state in the Union.

The National Association of Stove Manufacturers.

The National Association of Stove Manufacturers and the Stove Manufacturers' National Defense Association held their annual meeting in Chicago the first week of May and elected officers.

The principle interest centered in the election of a secretary to both associations in place of the late D. M. Thomas.

The vacancies were both filled by the election of Mr. Thomas J. Hogan, who enjoys a wide acquaintance among the stove trade, having filled the position very satisfactorily previously.

An Outrage.

On August 19 1894, the United States government caused, or some of its officials caused, the arrest of the officers of the B. Atha & Illingworth Co., of Newark, N. J., on the charge of furnishing the government unsound steel castings. The total value of the rejected work amounted to only $300 and the makers insisted that for all practical purposes they were up to the requirements and as good if not fully as good as could be made.

In response to several demands from government officials for duplicates to take the place of the rejected work the company insisted on the acceptance of the original castings, and they being as continually refused they were turned over to the well known Watts, Campbell & Co., of Newark, who finished them in the manner prescribed by the government regulations and in exactly the same way as they would have been finished by the Ordnance Department at Washington.

When delivered finished these once rejected castings were thoroughly tested and finally accepted. Washington officials deny responsibility for the outrageous arrest and the blame is laid by one department on another and so on, no record of it being available. The gentlemen arrested were placed under $1,000 bail and it seems have no redress for the malicious persecution they have undergone. If these smart government inspectors who are heard of occasionally in various parts of the country were appointed because of their fitness, instead of securing and holding on to their positions by virtue of their "political pull," there would be less of such clap trap work. Here we have the spectacle of five officers of a large manufacturing company arrested, disgraced and their business injured on a trumped up, malicious charge, while such precious rascals as those wno engineered the frauds at the Carnegie works go free.

No one hears of any arrests in their case, although the value of the worthless castings they imposed upon our government ran up into the thousands of dollars.

It is true the President deducted many thousand dollars from their account, but the men who committed the crimes are, as a matter of course, still valued employees occupying positions of trust at Homestead. In this latter case, also, it must be remembered the parties who exposed the frauds were workmen. The inspectors were always scru-

pulously blind. We wonder if they found it profitable.

Krank's Korner.

When I look into a shop and see every molder, as a sort of morning ablution, engaged in shaking out boxes, taking out castings, mixing facing sand and performing such other operations, that could be done equally well by a laborer, the thought has often occurred to me, do these foundrymen believe themselves to be obtaining the best results?

* * *

When I look a little further into these places and find the roustabouts attempting to make cores, knocking the boxes to pieces, and succeeding in this admirably, getting the lifting hooks on wrong side or none at all, filling the vents full of paste and cutting up other capers calculated to annoy and retard the molder later on, I am further compelled to confess that the foundryman's object in following such a course must be based upon some principle that has always been unknown to me.

* * *

I am aware that securing the greatest amount of work at the least cost is the desideratum sought in most cases. Yet, bearing this in mind, I fail to see where this end is attained in this case, and although every man probably knows how to run his own business and conduct his own affairs, though I may act something of an intruder in saying anything to disturb a few people's tranquillity, I also feel that the quickest and surest way of remedying an evil is to advertise it and make it prominent.

* * *

The reader may possibly not have had an introduction to a foundry where most things are placed on the crazy quilt plan, where it is never attempted to find out how nice work can be made, nor provide ordinary comforts for the men, who must live there part of the time, however, there are a few of these left yet, some the remnants of former generations and others have been created amidst all the clamor for modern ways and methods.

When a foundry has got such confidence in their patterns as to rely upon them to take care of themselves, it is naturally to be expected that after a short service some of these will appear as scarred veterans, and many will have missed some portion of their belongings, such as coreprints and exposed delicate parts, and all of them will generally be found maimed.

Every molder will on occasions excuse a

* * *

broken pattern and make the best of a bad job, but I have always been in the dark as to the policy of a foreman who would hand me a dust-covered, warped and broken pattern and ask me to make a dozen or more castings from it.

* * *

I have in mind an old gentleman, and I am positive he is not the only one of this tribe, whose mind revolves rather slowly upon the subject of having anything fixed up. It usually takes him two years to have a lost coreprint replaced, though if the molders will persist in annoying him with his shortcomings he may hurry up and have it done in one year. When a molder receives one of his mutilated patterns and inquires where the rest of it is, he will be told to "cut it out," and should this be objected to, he will meet with the bland reply that "We always did use to do it that way."

* * *

It may be a pleasure to be allowed to carve out missing portions of a pattern, but it grows rather tiresome when it is repeated too often on the same job. The result is neither creditable to the workman or satisfactory to the employer. There is a wide difference between making a casting without a pattern and making one with half a pattern, and the chances for executing a decent job favors the former. As stated before, though every foundry ought to know what is best for itself, the object sought in making every old flask and corner a receiving station for patterns with the inevitable result that they are damaged and then using them in this condition, has so far failed to be discernable to me.

* * *

Probably in no other industry can we find aggravated cases of men and materials be-

ing placed with such a reckless disregard for efficiency as in the foundry. To some readers who have never seen anything but foundries where things are kept tolerably straight, the foregoing statement may appear to emanate from a too vivid imagination, but anyone who cares to verify this for himself will be furnished with sufficient directions to locate a few shops where the claim for the best general disorder all around cannot well be refuted.

* * *

Some of these unpleasant reductions, charged to hard times, could, as far as many foundries are concerned, at least be decreased by placing men and materials in such positions that they will do their best.

* * *

The demand in the foundry business today is not so much for better mechanics as for better managers, for men who will realize the importance of hiring men who will look after economy in the output, rather than to employ inferior help and waste the pay to which good mechanics are entitled in inefficient methods of working.

Made No Mistake.

Evidently THE FOUNDRY made no mistake when it devoted a little of its space in its March issue to The Foundry Supply Co. of Boston, Mass.

One very well-known concern write as follows: We are much obliged for article in your March edition headed, "A Little Unasked advice." We have been sufferers on account of The Foundry Supply Co for quite a while. We fully agree with you and think that people transacting business as they do should be thoroughly exposed, as they are a great hindrance to any concern that wants to do business in an honest way and pay their debts.

Still another is considering the advisability of advertising for sale very cheap an "old established" account, which will probably appear in our next issue.

This Settles It.

Every few months some new story comes to our ears concerning some imaginary connection that exists between this paper, or its editor, and one or more of those concerns who favor us with their advertisements.

It may look like poor policy to dignify their yarns by publishing a denial of them all, but as one of our best known advertisers located at a distance from Detroit has requested it we acquiesce. We are not, financially, interested directly or indidectly, or in any way whatever, with any concern catering to the foundry business, although we take a lively interest in the success of many of those who have shown by their enterprise and good judgment that they know a good thing by advertising in THE FOUNDRY.

How It Seems to Strangers.

The following from the columns of an exchange gives an idea of how one of the most common of foundry operations is looked upon by the average newspaper writer:

First of all the crucible was swung to the ground in front of the furnace, the men using a huge crane for this purpose. Then the master workman tapped the mouth of the furnace and poured the bell metal into the below in what seemed a river of liquid fire without smoke or flame. When the 2,200 pounds of metal reached the charcoal fire which was burning in the bottom of the crucible there sprung up a bright green flame on one side of it, and the whole effect was gorgeous in the extreme.

Next the men threw in pieces of broken metal to cool the liquid to the right temperature, and slowly and carefully the crucible was swung to the bell form, into which it was to be poured. The master then stirred the charcoal in the crucible until it all rose to the surface, from which it was carefully skimmed and thrown on the ground. Then it was ready for the form, which in this case stood on top of the ground instead of being firmly walled up in the earth, like Schiller's.

This form is made of brick and clay and has two parts—an outer one which fits over the inner mold, leaving a space between the two just the size of the bell desired, and into the space the fiery metal is poured and cooled.

The writer was allowed to stand on top of a brick furnace. The dark foundry, dimly lighted in places, the silent, waiting men, with faces reddened by the glow from the crucible, the small group of visitors quietly

watching, made a weird, theatrical effect that every one noticed.

When the master spoke three men jumped to a platform on one side of the bell form, while opposite stood the master and two more men; then the crucible was lifted up and the metal, still like liquid fire, was slowly and very carefully poured into the mold. One man held a gas jet over the mouth of the mold and lighted all the gas that was generated, which otherwise would have spoiled the bell.

After the mold was filled the surplus metal was poured into a trench in the ground, and when cooled would be broken up.

Recent Improvements.

They must have a terribly hard time to get clean iron in France, judging from the following clipped from an exchange:

"To avoid blow holes in casting, a French engineer places on top of the flask an ingenious arrangement, a sort of little bathtub, lined with refractory material, and presenting three cylindrical hollows of different sizes, communicating with other by tngential channels. When poured in the larger hollow the molten metal whirls around for a time and escapes to the second basin, where it revolves in the opposite direction. Upon reaching the third basin it passes through a hole in the bottom of the mold, having lost in its passage through the basins the slag and other similar impurities."

It is amusing to note the amount of rubbish that is printed these days. That item would only be interesting to foundrymen, and whether the French engineer knew or not, it is the common impression that "blow holes" are not caused by slag or other impurities.

"Papa," said the daughter of a large employer of labor, "are you in favor of the eight-hour system?"

"Well, daughter, under certain circumstances I am."

"Oh, I am so glad!" she rapturously exclaimed.

"Why, my dear, are you so interested?"

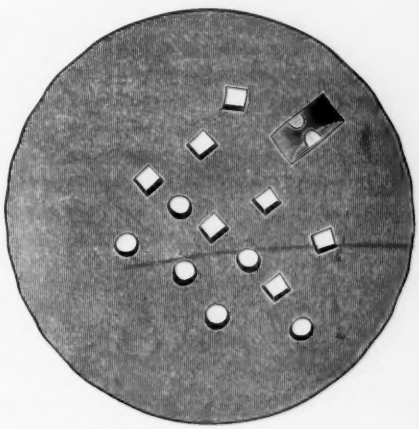
"Because, papa, George has only been staying four hours every evening, and he told me last night if you favored the eight-hour system he needn't go home so early. You dear old papa, I am so glad you are in favor of it." And she wrapped her soft white arms around his neck and choked off all explanations.—Texas Siftings.

Punching Cast Iron.

Mr. Editor:—

So much has been accomplished in the dim and musty past through the aid of missionaries that, by the samee token, wonders may be anticipated for the aid of the foundry fraternity in the future. Each day brings forth its Moses who, for shekels, fame, or for an opportunity to advertise his own wares, is willing to tell what he don't know about pig iron, etc.

Verily, this is an age of wonder, and alas! of deception, also, but when so astute an



observer as the editor of THE FOUNDRY is taken in what shall we say? A recent number of this journal showed a nice little picture, "A photo-reproduction of a small circular piece of cast iron, 4½ inches wide and ⅛ of an inch thick, the peculiar feature of the plate being that the holes shown, which are ¼ of an inch in diameter, were punched cold, with an ordinary power upnch, without in any way cracking the plate at any point." Then follows a statement that no "annealing process of any kind has been used," and there follows, also, an advertisement of the pig iron from which the casting was made, and a further statement that other "astonishing claims" are made concerning its quality.

We have waited with becoming patience for some of the "astonishing" claims which,

so far, have not appeared. There is nothing "astonishing" about the punching of cold cast iron, for proof of which see cut of a stove cover or griddle, which the writer took from the discount pile at the works of E. Bement & Sons, Lansing, Mich., and which has been punched with both round and square punches, when cold, and with no perceptible cracks.

To be sure the writer had much pleasure (with a very little profit) in supplying the pig iron for the mixture, but that does not signify, for the same thing can doubtless be done with the product of most any other stove foundry. There has been, and is now, so little occasion to punch cast iron, when cold, that it matters little whether it can or cannot be done successfully.

But so many clap-trap methods are used in these latter days, to hoist into notice the goods of individuals who are over anxious to sell, that even honest claims are sometimes taken by the average buyer, "Cum grano salis."

It is therefore with the desire that the foundryman will more fully exercise his "thinker" that this stove cover has been punched, cut made, and this communication submitted to the columns of THE FOUNDRY.

Yours truly,

F. B. STEVENS.

Detroit, Mich., May 10th, 1895.

With reference to the foregoing submitted to us by Mr. Stevens, the editor of THE FOUNDRY can only say that the reproduction of the small plate in our issue of February was not done at the solicitation or even suggestion of the makers of Clinton iron.

That a small plate only one-eighth of an inch thick and four and one-half inches wide would successfully resist 37 distinct punches when cold without showing sign of crack or flaw, seemed to us rather singular and at the same time complimentary to the iron. If we erred either in our judgment as to what was deserving of mention in these columns from a mechanical or metallurgical standpoint o ra knowledge of the proprieties to be observed, we hope Mr. Stevens as well as our many other readers will attribute our ignorance to a lack of experience in the pig iron business, in which he is so much at home.

That punching cast iron is nothing extraordinary is proven by the cut of stove cover sent us by Mr. Stevens, although we notice it is nine inches wide and three-sixteenths thick, with thirteen holes, and weighs four pounds, against eight ounces, the weight of small plate.

Then again he speaks of supplying the iron for the "mixture," thus giving the impression that two or more brands were used, while the small plate was made from one brand alone.

This may not be, in the eyes of our exceedingly good-natured critic, sufficient justification, and in fact hope not, as it may possibly lead to another contribution from such a thoroughly informed and entertaining writer.

It seems to us that the pleasure derived by a criticism from such a source would greatly outweigh any mortification at being compelled to acknowledge an error on our part.

The Molders' Convention.

The Iron Molders International Union will hold a convention in Chicago, Ill., opening July 8. It is to be hoped that for the sake of the molders themselves as well as for the welfare of the foundry trade in general that no radical changes will be made that will be likely to interrupt the comparative freedom from serious trouble they have enjoyed for the past few years. There is some talk concerning the need of a change and the enlargement of the benefit features, etc, but the molders of all tradesmen in America ought to know the value of harmonious relations with employers, as none have profited more from that source or lost more through conflicts.

Pittsburg and Vicinity.

The iron and steel trades, as they stand at this writing, are somewhat mixed. Generally speaking, the advances declared a few weeks ago have hardly been accepted by the entire trade.

Buyers are seemingly holding off apparently in doubt as to whether the advance can be sustained. The rise in coke seems to have caused a decided restriction in orders from consumers, and this has been the case in other lines. In spite of these

somewhat discouraging features the progress of the trade toward permanent improvement may be easily noted. The volume of trade is increasing and in some of the finished lines prices are a shade higher.

Leading manufacturers assert that any day is likely to develop active buying to cover midsummer and even fall requirements. It is certain that the question of contracting for finished material farther ahead than sixty or ninety days has been seriously considered, but not determined. The policy so far has been to buy as little as possible. There is more or less difference of opinion as to the course of prices during the next three or four months. As to crude iron, there is little room for difference when it is known that so many offers are out to furnish southern iron at current rates. Consumers appear to be gradually filling up, several large contracts having been recently placed. This seems to be a wise course, for no matter what transpires, southern pig will not sell below its April rates.

Below will be found quotations ruling during the month of April:

	Cash.
No. 1 foundry	$10.50@10.75
No. 2 foundry	9.75@10.00
Charcoal foundry, No. 1	16.50@17.00
Charcoal foundry, No. 2	15.50@16.00

Rolling Mill Castings.—Although there has been an advance made in the prices of materials entering in this market, still there has not been any made in rolling mill castings. The market is firm.

	Cents per lb.
Chilled rolls, up to 12" diameter	3¾
Chilled rolls, over 12" diameter	3¼
Sand and homogeneous steel rolls and pinions up to 12" diameter	2¾
Over 12" diameter	2¼
V-tooth pinions, additional	¼
Housen and rolling mill castings not otherwise specified	2
Spindles and coupling boxes	1¾
Squeezer castings	2
Squeezer pinions and wheels	2¼
Spur and bevel wheels, large	2½
Spur and bevel wheels, small	3 to 4

The Lincoln Foundry & Machine Co. has made application to change the name to that of the Lincoln Foundry Company.

Nearly all the foundries in this vicinity are running regularly. The Lewis, Fischer, Totten & Hogg, Frank-Kneeland, Lincoln, Mackintosh, Hemphill are all running in good shape

The American Malleable Iron Co., of which M. A. Cutter, of this city, is a leading promoter, has been organized at Latrobe, Pa. The plant will soon be in operation.

The Arsenal Foundry Co., Ltd., has the plant running as full as possible on a number of orders received for grate bars, boiler fronts, etc.

L. M. Morris, proprietor of the Iron City Foundry, which was destroyed by fire last February, will rebuild the plant, provided he is given the proper railway facilities. The structure will be large and commodious and will be built of iron, being fire-proof in every possible way.

The Totten & Hogg Iron & Steel Foundry Co., of this city, has lately shipped 8 mills to the Motnpelier (Ind.) Sheet & Tin Plate Company, 8 mills to the National Tin Plate Company, of Anderson, Ind., 2 mills to the Baltimore (Md.) Iron, Steel & Tin Plate Company; and is now ready to commence shipping the machinery for the Laughlin Nail Company's plant, at Martin's Ferry, O.

Personal.

The New Orleans Item devotes a whole column in a recent number to an extended biography of Mr. Joseph Shakespeare, one of the leading foundrymen of that city and State. Mr. Shakespeare has served two terms as Mayor.

Mr. E. H. Nelson, one of the owners of the Crown Iron Works, Minneapolis, was recently presented by the members of the First Swedish Baptist Church there with a beautiful and valuable gold watch and chain as a token of their appreciation of his 17 years services as superintendent of the Sunday

Obituary.

Joseph Doll met instant death by falling upon a quantity of melted iron in the Ross foundry, Chicago, April 30.

William H. Fairlamb, who was for many years superintendent of the foundry of the Harlan & Hollingsworth Co., Wilmington, Del., died in that city April 9.

Isaac H. Small, a San Francisco, Cal.,

foundryman, dropped dead there suddenly April 30, of heart disease. He went to California from Maine in the fifties.

John H. Sprow, one of the best known foundrymen in the country, died April 28 at his home in Chester, Pa., of lockjaw. Death was caused by an accident incurred while boarding a car in Philadelphia.

While a ton of molten metal was being poured at the Warren pipe foundry at Phillipsburg, N. J., a chain holding the ladle broke. Charles Scheinstein was jerked into the pit and the liquid metal buried him. Before his body could be pulled out his eyes were burned out and his arms and legs severed from the body.

William Fisher, proprietor of the Fisher Engine, Foundry & Machine Works, at Pittsburg, died Sunday morning at his home, 350 Main street, Lawrenceville. He was one of Pittsburg's oldest business men. He was born in Scotland in 1822 and came to America fifty years ago, and after a year's stay in Canton, O., went to Pittsburg, where for the past forty-nine years he was engaged in the engine and foundry business. He learned his trade in that city and soon became foreman of the shop in which he started as apprentice. He went into partnership with Bole, Graham & Price, and later bought out their interests, and for the past thirty-six years was in business for himself. His works were first licated at Sixteenth and Pike streets. Since 1881 they have been at Twenty-fourth and Smallman streets, Pittsburg.

Fires.

The New Doty Mnfg. Co., at Jamesville, Wis., lost their foundry by fire April 10.

Downing's foundry, Lincoln, Neb., has been destroyed by fire.

The foundry and machine shop of James P. Milligan, at Pottstown, Pa., was destroyed by fire April 28. Loss $4,000.

The foundry of the Chalfant Mnfg. Co. was totally destroyed by fire at Lancaster, Pa., April 23. Loss $8,000. Insurance $2,000.

The foundry of A. T. Thauwald & Co., Cincinnati, was destroyed by fire April 24. Loss $20,000.

The Portland Iron Co., at Portland, Ore., suffered from an $80,000 fire recently. Insurance $45,000.

Corbin & Thomson lost their foundry and machine shop by fire at Gouverneur, N. Y., recently.

The Columbia Fanning Mills of the Buffalo Foundry Supply Co., Buffalo, N. Y., had their building gutted by fire April 11. Loss $10.000.

New Foundries.

J. H. Hazen will erect a foundry at Fayetteville, Ark.

S. C. Keesling will soon commence the enlargement of his foundry at Muncie, Ind.

W. H. Elmer and Fred Cheney will start a foundry at Berlin, Wis.

The Glazier Stove Co. will build a foundry at Chelsea, Mich.

The new brass and iron foundry of Kelly & Kennedy has been started at Oneida, N. Y.

The Oakland Machine Co. will erect a $7,000 foundry at Bangor, Me.

The National Foundry & Machine Co., of Louisville, Ky., is going to erect a new plant.

Davis & Ingoldsby have started a new foundry at Council Bluffs, Ia.

A. N. Le Flamboy will erect a foundry at Clinton, Ill.

H. L. Chase contemplates the erection of a foundry at Connors Point, Wis.

The Thomas Brass & Iron Foundry will erect foundry buildings immediately at Waukegan, Ill.

It is said the new buidings for the Bell Foundry Co. at Northville, Mich., will cost $10,000.

The Reliance Foundry is a new concern in Tacoma, Wash., operating tne old Keystone factory building.

The Co-operative Foundry is to be a new concern in Canton, O. Shares $50 each. Eighty per cent to be held by the workmen.

The Vanderman Plumbing & Heating Co. have purchased the old Gong foundry at Willimantic, Conn.

The Ballauf Foundry & Machine Co., at Kellyville, Texas, will remove to Jefferson, in the same State.

Mr. Kremser, of York, Md., proposes to

establish a foundry at Hot Springs, South Dakota.

It is said that Senator Kellogg, of Dayton, Wash., and Senator Roberts, of Walla Walla, same State, will start a foundry at Tacoma, Wash.

O. S James, Oliver C. Kirkwald and E. A. Carleton, all of Helena, have filed papers of incorporation of the Helena Iron Works. The company proposes to carry on a general foundry business in Helena. The capital stock is $25,000.

The new foundry of the H. N. Strait Mnfg. Co. at Kansas City will be twice as large as the one recently destroyed by fire and of brick instead of frame, dimensions 80x80 feet.

The Scott Foundry Department of the Reading Iron Co. has finished and shipped to a New York export house a McCully crusher, for shipment to Africa, to be used in mines for crushing rocks.

Among the Foundries.

John Walsh has purchased Lemon's foundry at Waverly, N. Y.

The foundry of the West Superion Iron & Steel Co., at Superior, Wis., has started up. T. J. Thompson is foreman.

The West Point Foundry, at Cold Spring, N. Y., has about five months' work ahead, principally sugar pans.

The stove foundry of Burdett Smith & Co., Troy, N. Y., is about to recommence operations after a long shut down.

The Smead foundry, at Toledo, O., has been sold for $26,667 to Capt. C. W. Everett, supposedly in the interest of Col. Smead.

The Indianapolis Car & Foundry Co. have started up again after a long idleness and are busier than ever before.

F. E. Myers & Bro. are adding a brick addition, 45x100 feet, to their foundry at Ashland, O.

It is also one of the very few foundries in existence in which slave labor was employed for many years previous to the war.

The St. Paul Stove Works, after a shut down of four months, will reopen about May 13. Their prospects are for the ensuing year the best since 1892.

Thomas D. West, manager of the West foundry at Sharpesville, Pa., is another foundryman who has voluntarily raised his molders' wages 10 per cent.

M. Foley has sold his foundry at Mason City, Ia., to Frank Zoller, and it is said the latter may consolidate with the Hathorn foundry.

At Minneapolis the Minneapolis Threshing Machine Co. report trade much better than last season. They are putting a new separator on the market. Expect to market fifty this season.

Among other things, it is noted for the fact that it has still standing one of the old style cupolas, with solid bottom, the front having to be knocked in after a heat and cinders drawn out through the opening.

The Leeds Foundry, at New Orleans, La., is a sufferer from the recent business depression and the cutting off of the sugar bounty, which seriously affected their business. It is expected, however, that the plant will be kept running just the same.

The Twin City Iron Works Co., of Minneapolis, has secured the contract for the special castings to be used in the new water works reservoir. This will furnish employment for quite a number of molders throughout the entire summer.

J. Lowensburg, of Portland, Oregon, is after the Penitentiary stove foundry in that State. He offers to pay $2,000 a year for ten years as a lease of the plant, but desires to secure the convicts' services at less than 35 cents a day each, the sum required by statute.

The Leeds foundry is the oldest establishment of the kind in the south, having been in the Leeds family since 1876. In 1825 a small foundry was running on the present site, which was owned by three partners. In that year the father of Mr. Chas. J. Leeds bought the interest of one of the owners, and in the following year, 1826, a cousin became associated with Mr. Leeds, and they bought the entire property. Mr. Chas. J. Leeds went into the office of the establishment when young, and upon the death of his father assumed the management of the business, which has been running uninterruptedly now for seventy years, not even the

civil war having caused a cessation of work. This foundry turns out the heaviest class of work of any in the city, and is perhaps the largest in other respects, and no establishment of the kind is better known in the southern country.

As an evidence of the enlightened tendency of the times in connection with the buying and selling of pigiron it is interesting to notes that Rogers, Brown and Co. have made an important and commendable departure quite in harmony with the established reputation this enterprising concern have already made for themselves.

They have recently sent their customers an announcement to the effect that they have established a free chemical and physical laboratory for American foundrymen, which can be used by them in all cases where trouble grows out of iron furnished by them or their branches, a few tests of experiments looking to their supplying a satisfactory mixture. The circular in part reads as follows:

"By extensive traveling among the foundries and iron works of the United States, we are able to see clearly the great economic value to melters of iron of the application of strict scientific methods to foundry practice. We have noted also the difficulty most melters of iron have in securing exact scientific data and advice. Hence, we have determined to open in connection with our central office in Cincinnati, a foundry laboratory, where tests of all kinds, chemical, physical and metallurigical will be conducted by one of the ablest metallurgists of the United States. Mr. Ralph K. Gratigny, who will have this work in charge, devoted four years to the study of the metallurgy of iron and steel in the University of Michigan. Later he was a chemist at the Homestead Works, of Carnegie Steel Co. He has learned the trades of moulder and patternmaker, and made a close study of cupola and blast furnace practice. He therefore unites practical knowledge with high scientific attainments. Mr. Gratigny's technical discussions in the Mining and Engineering Journal have drawn the attention of advanced metallurgists to the thoroughness of his work.

The scope of the Foundryman's Laboratory will include:

Physical tests of mixtures (tensile and transverse breaking).

Chemical analyses of every kind.

Experiments of wide range, the purpose being by such means: (1) To locate and correct every fault of iron that gives a foundryman trouble; (2) T produce equivalent results by more economical mixtures, and (3) For the solution of any hard or knotty problems, the solving of which may be for the advancement of foundry practice."

Foundry Mention.

Providence, R. I.

At the Phoenix Iron Foundry they cast last week the last of an order of six cylinders, 48x52, the last one weighing over 14 tons. They are all cast for the Providence Steam Engine Co., who use them for making the Greene engine. They have recently built a core room in addition to the foundry, 25x60, with two core ovens and a five-ton jib crane.

The Builders' Iron Foundry are reported as having plenty of work.

The Corliss Steam Engine Co. is evry busy; shop full of men.

The Martin Pipe & Foundry Co. is a new concern incorporated at San Francisco.

Weitz & Turner are starting a foundry at Peabody, Ks.

Hermance & Co., at Kingston, N. Y., are working their employes over time; business rushing.

The Perkins Foundry & Machine Co., at Amsterdam, N. Y., suffered from a $5,000 fire a few days ago.

Wm. Wharton, Jr., & Co. are erecting a new foundry and machine shop, 52x250 feet, in Philadelphia.

Incorporations.

The Chicago Truck & Foundry Co. is a new concern in Chicago. Capital, $150,000.

The Leitch Malleable Iron & Bedstead Co. have incorporated to do business in Minneapolis, Minn.

The Kingston Machine Co. have been incorporated and will erect foundry and machine shop at S. Kowegan, Md.

The Novelty Mfg. Co has been incorporated at Alexandria, Ind., to erect a foundry. Capital, $15,000.

A New Window Operating Device.

Thomas Devlin & Co., propritors of the National Hardware and Malleable Iron Works, Philadelphia, are placing on the market a self-locking ventilator window that ought to prove a boon to foundrymen everywhere, as in no class of building is there more need of constant, rapid and efficient ventilation at times than in the average iron foundry. Our illustration shows the irons fitted to a set of four windows clocked open.

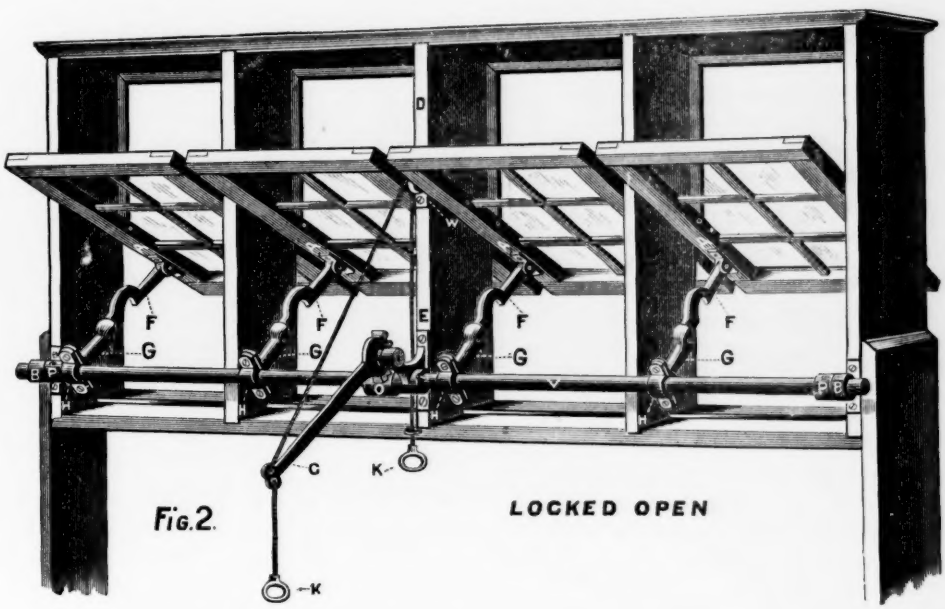


Fig. 2.

A represents plate of sash arm; B, pipe journal or bearing; C, operating arm; D, studding; E, bracket for operating arm or bearing; F, sash end of knuckle joint; G, clamping end of sash arm; H, clamping cap; K, handle; O, clamp gear; P, collar for pipe; V, pipe; W, pulley for rope.

To close the window all that is necessary is to pull rope K, operating on lever C. This causes pipe to revolve by means of clamp gears at O, and operates sash arm F, G, pulling shut and fastening securely the windows, which are so locked as to prevent their being effected by wind.

Chicago and Vicinity.

The foundry business is improving slow but sure, and the prospect is better than it has been for some time. The foundries all show signs of returning business, the architectural shops in particular. A good stiff advance in pig iron is now needed to lift the extremely low price of castings.

Dawson Bros. are running full time.

Kurtz & Buhrer are busy.

The Griffin Wheel Co. are building three new improved core ovens.

Cleveland & Co. are building an addition to their foundry.

Peter Reder is building an addition to his foundry.

Webster anufacturing Co. are working full time.

Butler Street Foundry are making the cast iron work for a large harness factory now being erected at Congress and Green streets.

The Home Stove Works have the contract to make 5,000 piano plates for Kimball & Co.

The U. S. Car Co. have resumed after a long idleness. It is the intention of the company to push the business.

The Drexel Railway Supply Co., of East Chicago, have been given the contract by Swift & Co., packers to make all their car castings for this year.

The Chicago Architectural Iron Works are building for the Pullman Palace Car Co. a

mile of wrought iron fence. It will be seven feet high and weigh 90 tons.

A. L. Hott has severed his connection with the Enterprise Foundry, of Harvey, and has organized a company, which will open the Automatic Mower Works of that place.

H. S. V.

Cleveland Molders.

In the latter part of April one or two of the leading firms in Cleveland, O., posted notices that on and after May 1st they would increase their molders wages 10 per cent.

Whether or not the employers were induced in any way to do this because of a threatened demand on the part of the molders we cannot say, but this action on their part certainly hastened the molders in uniting in a request that the increase should be universal.

Sofme of the foundries agreed to this on the spot and others only after a shut-down of a few days, but in the end the molders were all satisfied and we believe and hope the proprietors were not greatly inconvenienced. The miniumum has been established at $2.50 per day basis and is a most encouragaing sign of returning prosperity, as wages are generally the first thing to be affected during a period of depression and the last thing to recover.

The Market.

We are frequently asked the reason why THE FOUNDRY does not publish a market report giving current quotations of the various metals, such as iron, copper, tin, etc., used in the foundry business.

Our answer has invariably been that this paper, being a monthly, could not keep its readers as well posted on this subject as those papers published once a week and with whom a market report was a prominent feature and who had opportunities of getting accurate information for that reason that would not be accorded to a periodical coming out twelve times a year.

As this reply has not, however, seemed to give entire satisfaction, we wish to announce that commencing with this issue we are going to give the readers of this paper the best information obtainable from the most reliable source possible. We will publish hereafter in each issue a brief synopsis of the market prices furnished "The Iron Age" by its representatives in various parts of the United States, believing that no more impartial or reliable authority exists in the country and none receive or are entitled to receive more consideration.

The Iron age says:

The general advance in blast furnace wages in the principal western districts puts all chance of lower Bessemer pig iron at rest for the present. The raising of wages at a number of steel works and rolling mills foreshadows a general movement in that direction throughout the whole territory north of the Ohio River and the Alleghanies, and may affect the eastern makers also. The fact that a leading Pittsburg concern put up up wages in spite of existing contracts with the men is likely to prove a powerful argument with the dissatisfied in other districts. From the standpoint of the buyer this means that prices recently current, and in some sections still prevailing, will not be witnessed again, unless there is a sharp decline in the demand.

Local foundry irons in Chicago and in the east are selling quite well, and on the seaboard a slight advance is being obtained in some instances, with more hesitation to contract for the future. The Pocahontas coke strike has caused the banking of a number of Virginia furnaces.

In cast iron pipe the only transaction of consequence has been the purchase of 9200 tons by Syracuse, the work being distributed among a number of foundries. This time the southern shops secured a good share.

With the rising tendency in our markets encouragement is given to efforts to get manufacturers together for mutual advantage. The Western Bar Association is doing well. The wire nail people are to-day working at the formation of an association. The cut nail manufacturers are traveling in the same direction. The western and southern cast iron pipe shops are trying to get together, and the makers of merchant steel are in conference. Report has it, too, that a movement is progressing to arrange for a common sales agency for Connellsville coke.

The metal markets have been quite excited. Copper has been stimulated by a sudden and excited rise in London, for which the ostensible reason is an agreement to

limit American exports to 60,000 tons per annum. If such an arrangement exists it does not include important interests. Really the advance is due to an expanded demand.

There has been a heavy movement in lead in all the primary markets and prices have been sharply advanced, with sellers at the close holding off.

We quote $12@$12.50 for No. 1; $11@$11.25 for No. 2, and $10.25@$10.50 for No. 2 plain, standard brands, tidewater delivery. Southern iron, same delivery, is selling at $11.25@$11.50 for No. 1; $10.75@$11 for No. 2; $10.25@$10.75 for No. 3; $10.50@$10.75 for No. 2 soft, and $10.75@$11 for No. 1 soft. Foundry No. 4 (foundry forge) is $10@$10.25.

CHICAGO.

Pig Iron.—A decidedly active week has been experienced by manufacturers of local coke iron. Contracts have not been large, but orders have been numerous. Some good sales have been made of Bessemer for malleable purposes, but the quantities taken have not been so large as might be expected. A good prospect for future business exists in this direction. Prfices are very firm, with a continuous upward tendency. Southern coke iron has been comparatively quiet, but a few fair contracts were entered during the week. Soft irons and No. 2 foundry are now exceedingly scarce, and attention is being diverted a little more strongly to Ohio irons to meet the demand tor soft grades. Lake Superior charcoal is in better demand, and one seller reports sales aggregating 3000 tons the past few days. Quotations are as follows, for cash:

Lake Superior Charcoal	$13.00 to $13.50
Local Coke Foundry, No. 1	10.50 to 10.75
Local Coke Foundry, No. 2	10.25 to 10.50
Local Coke Foundry, No. 3	9.75 to 10.25
Local Scotch No. 1	10.50 to 11.00
Ohio Strong Softeners, No. 1	12.50 to 13.00
Southern Silvery, No. 1	12.00 to 12.25
Southern Silvery, No. 2	11.75 to 12.00
Southern Coke, No. 2	10.50 to 10.75
Southern Coke, No. 3	10.00 to 10.25
Southern, No. 1, Soft	10.50 to 10.75
Southern, No. 2, Soft	10.25 to 10.50
Alabama Car Wheel	17.50 to 18.00
Jackson County Silvery	15.00 to 15.50
Other Ohio Silvery	14.25 to 14.50
Coke Bessemer	11.50 to 12.00
Coke Malleable	11.25 to 11.50
Spiegeleisen 20 per cent	... to 26.00

METAL MARKET.

Copper.—Prices have undergone a sharp advance and the market is very strong. Lake Superior ingot is up to 10½@10⅝c, with the inside rate paid for a very fair amount of the metal for delivery this month. Electrolytic has been sold this month at 10.25c, and is now generally held at 10⅜c@10.40c. Casting stock is not offered below 10¼c, and has been sold to a moderate extent at that figure. Deliveries are being made very freely, but the consumption is heavy, leaving little to offer for delivery this month or next. Export movement is quite free, but chiefly on old contracts. There is still more or less speculative interest in the market, but the late short interest has, it is understood, been covered to a considerable extent.

Pig Tin.—Straits tin has been sold at as high as 15¼c in 5-ton lots during the week, but receded toward the close, prompt delivery going at 14.95c and futures at 14.90c@14.95c. Speculation has been fairly active but dealings were hardly as large as might have been expected in view of the sharp movement in prices and stimulating reports from the London market.

J. M. Barrie, whose Little Minister, placed him in the front rank among contempoary authors, was born in Glasgow in 1848. His father was an iron founder, and young Barrie followed his father's calling as a matter of course. He rapidly extended the business and to-day it prospers greatly under his management. He removed his foundry to Manchester about fifteen years ago, and now has branches of it in London and Liverpool. Barrie is estimated to be worth to-day $250,00 and perhaps more. All this time he had never thought of literary work, but one day he took up his pen and as he narrates it himself, never laid it down until he had written a story. But the story made a tremendous hit, and he has been writing ever since. Mr. Barrie is described as a shabby little fellow, with a Scotuh brogue in his speech, and looks more like one of his own foremen than an author. He was long in correspondence with the late Robert Lewis Stevenson and had planned a visit to Samoa.

The Philadelphia Foundrymens' Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, on Wednesday, May 1, the president, Francis Schumann, of the Tacony Iron & Metal Co., Philadelphia, occupying the chair.

The Executive Committe made a lengthy report and among other things said: "We would call you special attention to the paper on 'Machine Moulding' presented at our last meeting by Mr. Groves. It covered the subject in a clever manner and described the improvement in foundry practice during the last 20 years. Wt think it will pay those who were not present at the last meeting to read the paper. It seems to us that the moulding machine is being used to a greater extent each year. There are a number of excellent machines on the market, and where a large amount of duplicate work is required they are very acceptable and may be used with economy. They are adapted to almost anything that will go into a snap flask, say 16x24 inches. There is also a machine for making gears of almost any size required, the quality of work being better and more accurate than that made by hand. We can see no reason why business in general should not improve with the warmer weather, everything pointing to a better condition of business."

Howard A. Pedrick, of the Pedrick & Ayer Co., Philadelphia, then read a paper, as follows, "Compressed Air: Its Utility and Advantages as Applied to Foundry Purposes."

The advancement made in the different arts and sciences seems to have, in a measure, escaped the foundry. Mechanical skill and ingenuity have improved and greatly reduced the cost of working metals by the employment of special machinery to do a great deal of hand labor. The foundry, which is fundamental in the first process of machine construction, should be abreast in the general advancement, by bringing to its aid facilities to allow its product to be manufactured and handled just as economically as other lines. The moulding machine has found favor in producing large quantities of work which formerly was only accomplished by skilled labor, but which now can be manipulated with often better results by unskilled labor. The machine moulded gear wheel is another manifestation in the line of progress, producing a much superior article at a much reduced cost.

Along this line of progress and advancement we find an element, abudantly supplied, only waiting to lend its aid, when properly handled and utilized, to further our aims in reducing the cost and lessening human labor, which can then be more profitably employed in doing that which no agency can accomplish or power supply. Means and methods used to lessen physical exhaustion will generally result in a marked improvement in quality and quantity. This element we find in compressed air, which will be found a giant in strength, and at the same time a clean, safe and docile power to handle.

Considering its utility and advantages, compressed air as applied in order to lessen labor and increase the foundry's production deserves attentive study. The successful employment of compressed air in many other kinds of industries suggests that it can and should be made to serve many an operation in the foundry now performed by more expensive help. To successfully employ its agency cost and maintenance have to be considered. The average foundry would not necessarily need to have a very extensive or costly plant. The compressor, which is the starting part of an installation, has to be considered. To avoid trouble and expensive maintenance it is desirable to obtain a machine calculated to furnish the volume of air needed with as little power as possible. Then, too, since the air will be used intermittently the machine is better adapted if automatic in its action, thereby dispensing with any attention other than oiling. This automatic action is controlled by the variation of air pressure, causing the machine to start up when air is being used, or stopping when the desired pressure is obtained, thereby saving power, wear and tear, etc. Durability and simplicity must not be lost sight of, from the fact that around the average foundry there are not always available men to over come any little tricks that a great many air compressors are more or less subject to. The air supplied for foundry purposes, too, must be

dry, so that exhausting from a hoist or other apparatus it does not cause a miniature shower in the nature of spray. The larger types of machine often use water for cooling the air under compression in the compressing cylinder, which causes the exhaust to have the objection stated.

Cooling the air by a water jacket around the cylinder is preferable, not only from the fact of having dry air, but because it avoids the danger of water getting into the cylinder and causing its destruction. Clearance between piston and cylinder heads must be reduced to as little as possible, so as to eject all the compressed air at every stroke. Without doing so the air, necessarily heated under compression, expands and will not allow the cylinder to take in its full capacity of free air, thereby causing the machine to labor without result.

Where power is available the belt driven machine has the advantage for economy of power, because using steam in a good type of engine gives much better results than the same amount of steam used to drive a direct steam driven compressor. Then, too, the belt driven machine does not, on coming to a standstill, have to contend with water from condensation when required to start up. The belt only consumes just enough power to do the work, leaving a well regulated and economical engine to use the steam more effectively.

The air receiver or reservoir, placed in almost any out-of-the-way place, should be of liberal dimensions, as there will be times when for short periods more air will be consumed than perhaps the compressor is able to supply; but, on the other hand, there will be more than the demand, and a large reservoir is there to receive and store it up. The receiver should not be less than 48 inches in diameter by 8 feet long, double riveted and well stayed, to safely stand a working pressure of 100 pound to the square inch. Fitted to it should be a pressure gauge safety valve, a drain cock close to the bottom and an inlet hole not less than 1 1-4 inch pipe. The outlet should be located at the top, as air contains considerable moisture. Taking the supply in the manner mentioned does not agitate the water which accumulates gradually in the receiver. For this reason the drain cock should be opened occasionally to free it.

The conducting pipe through the foundry should not be smaller than 1 1-4 inches and every connection should be a "T." If the openings thus left are not used they can be plugged up, and it will be found a good plan to arrange the pipe line so that a connection can be made without much trouble or expense. Wire wrapped 3-4 inch hose, three or four ply, which is quite good enough and not expensive, is the best method of conveying the air from the pipe to the different fixtures and to the points where it is to be employed. A hose of this description long enough to serve quite a floor area will do better and save much time employed to do what now the moulder uses his hand bellows and brush for. This fixture is similar to the common garden hose branch pipe fitted with a thumb cock and is easily controlled; the blast of air received from it can be as mild as a breath or severe enough to blow a mould to pieces. A few such blow pipes will never get lost or misplaced and be a convenience for those haveing use for such an appliance.

Foundry work necessarily entails a great amount of labor in handling materials and flasks and work of such character. Compressed air can be utilized here to very good advantage. Used for lifting flasks and drawing patterns, its elasticity rivals the most sensitive hand labor and it does its duty in a most satisfactory manner. These pneumatic hoists are commercial articles costing but little more than the ordinary chain hoists. The general construction is a cylinred fitted with a piston and rod, suspended from the top end, allowing the piston rod to have the load attached to it. They are direct acting, needing considerable hight of floor for working them. The general mode of using them is to hang them from a fixed position. This does well enough for certain work; but the better and most practical way is to have them arranged on a trolley running on an overhead rail. A jib arm arranged to cover a sufficient floor area makes a fixture which can be handled and utilized with very little energy. At the same time it is more speedy than a mechanically moved apparatus for loads varying from 100 to 10,000 pounds. The hight needed from floor to ceiling for overhead appliances limits the general use of the straight lift pneumatic hoist. To overcome this objection the writer

has constructed a pneumatic hoist with a horizontal cylinder, and so manipulated that a much greater hight of lift can be had with a very much lower ceiling. Where it is found necessary to have the hoist and load move a considerable distance beyond the practical limit of an attached hose several industrial establishments use the Westinghouse air brake coupling, which can be coupled and uncoupled very quickly. This allows the hoist to be used wherever desired. These couplings are attached to hose hanging from the pipe line about every 20 or 30 feet. In some places a drum or reel is arranged to have the conveying hose wound around it. When moving the hoist away from the reel the hose is unwound and a weight attached to a rope or cable is lifted, which winds up as the hose unwinds. As the hoist advances toward the reel again this weight keeps a tension on the hose by turning the reel in the direction necessary to wind up the superfluous hose.

The different modes of equipping the foundry with the smaller lifts have been dealt with in a general way. The large traveling crane can be worked with compressed air as a motive power with very good results. The only change from the electric power driven machine is placing on and driving its engines with air, and power traveling cranes can be easily made into pneumatic ones and accomplish much saving by the introduction or substitution of air power. The pneumatic system of lifting seems to be better adapted for the general run of work—that which is too heavy for one man to handle to about 10,000 pounds. The hoist requires no manual labor other than the manipulation of a small three-way valve. The workman need not wait for slow moving mechanism or for the shop laborers to lend him aid. The economy resulting from the use of pneumatic hoists is due, 1, to the reduction in time and labor required to lift the load, and, 2, the additional amount of work it enables the man to turn out.

Pursuing the subject of pneumatic lifting a little further in regard to its manipulation, the writer appreciates with what delicacy the cope of flask must be lifted from the drag to avoid injuring the mould. For this particular purpose he has in view a taper winding drum for the lifting chains to wind on, thereby reducing the speed of the lifting chains at the start and also having the effect of lowering down to slacken speed as the terminus is reached. The horizontal pneumatic hoist has some peculiar features, making it very easy to do delicate lifting. In parting a flask it is good in practice to allow the chains to have considerable slack. The operator then admits enough air to slowly start the winding drums. When the hoist encounters the frictional resistance offered it appears for an instant to cease lifting. Here is where the elasticity of air plays its part. For after the apparent stop, the hoist gently strains on the chains until the power is enough to overcome the resistance. It lifts the cope without damage to the mould, which can then be handled as rapidly as desired.

Compressed air does not reach its full capabilities in lifting and conveying work alone; we are trying to use its force for other practical uses. Those who use the foundry's product appreciate well cleaned and pretty castings, and are often disposed to patronize the foundry which looks well after this end of the business. Some are even willing to pay a higher price where attention is given in this direction. Some few years ago the experiment of cleaning castings by the sand blast process was tried and difficulties were encountered. Steam at about 60 pounds pressure was what was then used. This wet the sand and caused frequent clogging of the pipes, and made it next to impossible for a man to stand the severe rebound of the sand. But realizing the future which the sand blast had before it led to perfecting this apparatus by the use of compressed air, thus allowing its use for bringing castings to a further degree of perfection. Ornamental and fancy castings can be thoroughly and cheaply treated in this way, producing an article which otherwise requires considerable labor to finish. In ordinary classes of work it is possible, and at the same time practical, to clean thoroughly 6 square feet per minute, no matter

Howard A. Pedrick was born in Bridgetown, N. J., December 5th, 1863, and should certainly be a successful mechanic if heriditary influences avail anything, as the family for four generations preceding him were noted for their mechanical attainments.

Mr. Pedrick's leanings in that direction were early developed and it is said of him

that he exhibited a marked fondness for "seeing the wheels go round," by the time he was four years old.

In 1872 he removed to Philadelphia, where his father had charge of the L. B. Flanders works.

Here he attended the public school, graduating from the senior class in the grammar school, afterwards going to learn the machinist's trade under his father, and studied mechanical drawing at the Spring Garden Institute.

HOWARD A. PEDRICK.

He soon developed an unusual degree of skill in his profession and at the age of only twenty years was made assistant foreman at the shops of Pedrick & Ayer, and since the formation of the Pedrick & Ayer Co. he has held the position of general foreman over the works. He is of an inventive turn of mind and has recently patented among other things a compound automatic belt air compressor and a horizontal pneumatic hoist with safety attachments.

For some years he has given the subject of compressed air and its uses much study and is probably as well posted as any authority in the country on that subject.

how much ornamentation covers the casting. Steel castings are very hard to clean ordinarily, but yield under the influence of the sand blast. The machine used for uspplying the sand has the appearance of a vertical boiler, fitted with the necessary mechanism of feed valves, sand chambers, etc., so arranged that an air pressure of about 10 pounds per square inch catches the sand and delivers it through a pure rubber hose,, which, on moving about, must not kink, because a sharp bend leads to the destruction of the hose by the sand. A peculiar feature of the sand blast is that it only cares to attack hard substances; anything of a soft or yielding nature stands its cutting action to a remarkable degree. In practical operation the work is accomplished by handling the hose pointed at the object in a similar manner as if playing water on it. It creates considerable dust, so that open or well ventilated places are preferable. The machine is portable, and by conveying the air supply to it it may be used almost anywhere. The application of the sand blast does not find its full utility for foundry work in the foregoing procedure alone. The writer's attention was called a short time ago to an ingenious contrivance in the nature of a tumbler or rattler, revolving on frictionless rollers, with an attachment for the sand blast nozzle. The addition of the sand blast helps to attain more thorough cleaning of smaller pieces with less tumbling.

Still hunting for further use to which compressed air can be put, why not consider the old method of chipping with a hammer and chisel, which we all know to be laborious and slow? The pneumatic chisel does vastly more and better work than can be accomplished in the old way. This little tool weighs about 15 or 20 pounds. It is a cylindrical piece of steel, bored out to receive the piston, which is also the hammer. A small valve, controlled by the air pressure, admits air on either end of the piston, causing it to reciprocate very rapidly and to strike a blow at every stroke. The chisel is placed on a shank projecting from the cylinder. A slight pressure of the hand holding the upper end of the tool admits air, which starts the hammer. Externally there is nothing moving; the chisel is kept in contact with the work, as if the operation were a pushing on process. The amount of work accomplished by this little air tool is surprising, and where much hand chipping is done opens a way to very materially reducing the cost and labor for such work.

In foundry practice it sometimes happens that large, heavy castings must be broken up to be returned to the cupola. A small

portable drill, with compressed air for the motive power, allows several holes to be drilled into such a piece, after which a round taper steel wedge, with a few well directed hammer blows, severs the piece, which is then suiable for remelting. This little machine has sufficient power to readily drill a 1 1-4-inch hole, and weighs about 40 pounds. Its size and weight allow it to be used in almost any place where the air hose can be attached to it.

In almost all lines of manufacutring there are often disagreeable operations to perform, and probably one of them is the breaking of pig iron. This can all be changed where air pressure is available. The machine is quite simple in construction, being a cylinder fastened to an upright piece with a weight attached ot the piston rod and a hollow anvil block at the bottom. The pig is placed on this block. A lever which controls the valve admits air under the piston, raising a weight of 300 or 400 pounds. Then by a reverse movement of the lever the air is quickly exhausted and the weight comes down, breaking the iron in the middle.

The plan of having portable sand sifting machines has many advantages over the belt driven machines, which are located in a fixed position and to and from which the sand is conveyed. The sand sifter, fitted with the necessary mechanism for compressed air, can be moved from place to place to perform its work, which results in the saving of time usually needed to convey many tons of sand to and fro. The machine is not unlike the ordinary power or belt driven kind; the change is to substitute air for the belt. Wire wrapped hose is the conducting pipe. Another apparatus which deserves attention i s the Lucigen light, adapted for either outdoor or indoor purposes. To increase the surface and brilliancy of the flame compressed air at a pressure of from 10 to 30 pounds per square inch is generally used in conjunction with a suitable grade of oil, the air forcing the oil through a nozzle, where air and oil mingling together form a spray. When ignited this yields a large, clear flame of great illuminating power. About 1 gallon of oil per hour and 60 cubic feet of free air under pressure are required to maintain a flame of 5x30 inches, the illuminating power of this flame being reckoned at about 1,000 candles. Lamps of this character are of great service where diffused light of great power at small expense is required.

Compressed air certainly has a field of usefulness and can accomplish much with a decided saving in foundry practice.

The plant is not necessarily expensive to build or maintain. The average foundry with a plant costing from $800 to $1,500 can make a good showing resulting from its adoption.

At the conclusion of the paper some little discussion ensued. Secretary Evans said that compressed air power was being used by a large number of establishments. He had in mind a shop where it was used for a number of purposes, on sand sifters, on a machine for breaking pig iron, on cranes, and to blow the whistle. It appeared to be both economical and useful and good results were being obtained.

President Schumann stated that his company had recently put sand blast machine in their works, and where formerly two hours were required in cleaning special castings the machine did the work in ten minutes. The only trouble with it was that the operator was trying to do everything with it, even trying to chip out the cores on 12-foot columns. They were using it on large castings to dispense with the use of facing in the sand. They were using the sand raw on castings weighing as much as 5,000 pounds to 8,000 pounds, and the castings ultimately developed a beautiful slate color; yet when they came out of the sand it would seem to be a question as to how the sand could be taken off them.

In reply to questions, Mr. Pedrick said that the best pressure to carry for the air hoists was about 80 pounds to 100 pounds. The diameters of the cylinders were based on that pressure, allowing about 25 per cent. for friction. In regard to the elasticity of the hoist, due to the pressure of the air, an instance was related of a certain machine being condemned on account of its extreme elasticity. Mr. Pedrick thought the condemned machine must have been badly constructed, and the trouble probably arose from excessive friction. Asked how the cost of compressed air compared with that of steam, Mr. Pedrick replied that steam

was, of course, cheaper where it could be utilized, but the valuable feature of compressed air was that it was a clean element to handle. With steam it was necessary to take care of the exhaust, and condensation was rapid, the result being a lift while the pressure was on.

Mr. Birkinbine belived compressed air to be practically applicable for any purpose for which steam was used as a motive power. He instanced some uses of compressed air power on a large scale, and said that Mr. Pedrick had explained the use of the same power on a small scale, and he could see no reason why there should not be a large field for it.

A vote of thanks was then extended to Mr. Pedrick for his paper.

John Grant, of Gloucester, N. J., then read a paper on "Relations Between the Atomic Hypothesis and Vibratory Motion and the Melting and Cooling of Metals."

At the conclusion of the paper the meeting extended a vote of thanks to the reader.

The meeting then adjourned to the cafe on the roof of the club house, where supper was served, and an hour or two spent in social intercourse.

The Foundrymen's Association.

The regular monthly meeting of the Western Foundrymen's Association was held Wednesday evening, April 17, 1895, at the Great Northern Hotel, Chicago, Geo. M. Sargent, the President, in the chair.

The following were unanimously elected members of the association: Gilson Mfg. Company, Port Washington, Wis.; Western Malleable & Grey Iron Company, Port Washington, Wis.; G. D. Chamberlain, chemist, South Chicago, and Frank C. Patton Company, Sycamore, Ill.

The Nominating Committee presented the following list of names to be voted on at the next meeting:

President, John M. Sweeney, W. N. Moore, C. A. Sercomb.

Vice-President, H. L. Hotchkiss, John M. Sweeney, A. W. McArthur.

Secretary, B. M. Gardner, H. S. Vrooman, S. T. Johnston.

Treasurer, O. T. Stantial, A. M. Thomson, L. Wolff, Jr.

Executive Committee, Geo. M. Sargent, John M. Sweeney, O. T. Stantial, A. M. Thomson, W. Francis, E. H. Walker, John T. Rowlands, A. W. McArthur, J. H. Dalton, N. M. McLaren, L. Wolff, Jr., F. W. Sargent, A. D. Edwards, C. A. Sercomb, J. L. Hecht.

The Secretary read the following paper on "Future Improvehent in Foundry Work," by Herbert M. Ramp.

No one will question that our improvement in rapid and economical work will be marked to a decided degree in the next decade. In the first place, foundries of the future will confine themselves more exclusively to one class of work. The jobbing shop and others that try to cater to every grade, that attempt to make everything from marine engines down to a door lock, will be things of the past, or exist in greatly diminished numbers. Foundrymen will turn their attention to producing one particular grade of work at the lowest possible cost, and the less varied the work the greater the possibilities of cheap production.

Appliances will be made in each individual shop to suit the different classes of work, and the rigging thus constructed will require brains, money, and especially a thorough understanding of and everyday contact with the work in question. Firms will understand the wants and requirements of their business better when they have only a certain grade to look after. The men employed, from the foreman down to the common laborer, will understand their work better, and be able to accomplish more, through constant repetition. Molders will make fewer bad castings, as the new system will not require a constant series of experiments on new and strange work.

To-day we have stove, agricultural, bench, railroad, architectural and other classes of foundries that make nothing beyond a single line of work, but they have not yet reached the point where they have no competition from foundries engaged in general work. It will be folly for a shop building engines to attempt to take an agricultural contract, or vice versa, when we consider that one has the most experienced men and the most approved methods in its particular line. The shop that makes dry sand, loam, or any specialty, will make the same without fear of competition except from those engaged in the manufacture of the same articles. The experience and practical,

everyday observation will give to the specialist the opportunities others lack.

This will mean better equipped foundries, better appliances. The buildings will be constructed to suit the special grade of work. There will not be so wide a field of supposition. When cranes are used they will be large and strong enough to do the work. The machines, cupolas, core ovens and other rigging will be built to suit the product. The pig iron, blackings, sand and all the other details will be purchased according to their adaptability and all elements reduced to a scientific basis. To-day we have hundreds of shops where the work is too large or too heavy to handle with economy. A foundry is built and fitted up according to some other shop's standard. The proprietor believes it is large enough to do any grade of work he might obtain; yet in a short time he finds it utterly inadequate to perform the necessary work, and the result is always increased cost of production. With improved methods such practice must cease. The man who builds a foundry will first understand his business and have one class of work definitely in view. Foundry improvements grow more expensive every year, and will continue to do so. This is an argument in favor of the still further division of our foundries. The time when a cupola, blower and a few sand piles constituted an equipment has well nigh passed away, and the increased expense of machinery, patterns and fixtures will not only assist in driving firms to specialties, but protect them when once started in business.

There is one deplorable condition in our business. It has not been given careful study. Complete records have not been kept nor have operations in any manner been reduced to a scientific standard. The machinist has his text-books, rules and tables, all based on experiment and the experience of practical men. Yet, excepting the records and research embodied in permanent form by three or four men, our foundry practice has been tradition handed down from father to son, and often embodying practice that is absurd.

We should and will develop more in this line. Such organizations as our foundrymen's associations and such trade journals as we have, are giving us a means of collecting information. Accurate records of our daily work should be kept, and every mixture of iron and its results carefully noted. Mr. Keep has done a great work in this direction and its influence is felt in many of our foundries to-day.

The amount and kind of iron melted, fuel and blast pressure used, and in fact all the details of our everyday work, should receive systematic attention and the monthly or yearly results be made known. We have no set of tables for computing the strain on flasks, clamps and various other rigging used daily varied by the different hights of gates, except by processes rather tedious for a busy man. Still less do we know the actual strength of our fixtures. It is too often a matter of conjecture and supposition. We have no rules for shrinkage of castings, or what size risers it requires to feed bodies of certain thickness. We are guided only by a sense of fitness or judgment. Contraction we are compelled to learn in order to make work at all acceptable, and why shall we not in a more scientific manner master these problems? Where do we find information as to the size of lumber to use in flasks of different lengths, from 10 to 25 feet long, or the thickness and construction of iron flasks according to size and intended use? Molders have very little data to work from. We have articles and discussions on steel and mechanics and in numerous other fields, but where is the authority that treats molding sand in a practical manner, and gives information upon the necessary constituents of such sand, its qualities and treatment in different localities, on different work? There are some who do not require such assistance from others in their work, but they are men who have mastered the business thoroughly, and their number is easily counted.

Yet how much further they might have been advanced if they had authorities that pointed out to them many things that were learned by trying experience. One great trouble with foundrymen as a class is, they study effect, not cause. Certain practice brings certain results, they know this; but the underlying cause is never mastered. Too much valuable knowledge and information dies with each generation; the experience and study of a lifetime too often is lost to us, except a few fixtures or ideas we have

remembered. The future foundryman will have more classified information than the one of to-day. Text-books will become as common in the foundry as in other mechanical lines; the results of our work will be more carefully kept, and together with these opporutnities of interchange of experience, will form material for authorities that, while they will not be infallible, will be of incalculable assistance. Chemistry will become not only an aid but a necessity, and will be applied in a practical manner by practical men. Bad work will be reduced to a minimum by such practice. To-day the bad castings that are made annually in this country would pay a good rate of interest on all the money invested in foundries. This will seem a broad assertion, but a little self-examination will convince the most skeptical.

Molding machines will play a prominent market a number of machines at present, part in our improvements. We have on the good, bad or indifferent, but the best are rather expensive and firms hesitate to invest. This condition will pass away. No matter if a machine costs $50,000, if it is a sure means of reducing cost of production the investment will be made cheerfully, and the more expensive the machine the better it will protect from competition the firm that buys it. Our machines will also be constructed for more rapid and economical work, will be more nearly automatic, and in some cases entirely so. They will be built in more sizes and shapes. One machine is not capable of being adapted to every class of work, economically, any more that a machinist can cut thumb screws to an advantage on a 48-inch lathe. Our machine shops are examples of what our foundries will be in this regard; their machinery is built for every class of work, and almost every size. Machines will also be built in some cases to suit a great variety of work, so common patterns of almost any shape or design can be used at very little extra cost of rigging, but in specialties they will be built to suit the exact grade of work and in many cases the identical casting.

Core rooms and core ovens are often a very expensive feature of our work, and the reason is plain. The men who control or work in them, like the molders, have little information, except what they acquire by experience and hard knocks, and have even less assistance in improved facilities. Machinery has been a rare thing here, but with the advent of air in our foundries and stimulated enterprise, there is no question but machines will be constructed that will reduce cost to a great extent. The mixing of core sand in foundries that use many large cores is an item of greater expense than we would believe. The time consumed is something appalling, and here is room for decided improvement. Mills or mixers can be built to do the work, operated by power, mixing the sand and flour, riddling the same and preparing it for immediate use, with one handling. Joining cores is another expensive operation, but many of our foundrymen to-day are resorting to the plan of making cores solid, and have plates of the requisite shape to dry them on. Bumpers, oil boxes, round column cores and numbers of others are handled in this way now; but the field for the expansion of such facilities is large and will be sure. Besides saving time in joining, cores made in this way are stronger and nearer to the exact size desired; also one whole core can be made quicker than two halves. Core boxes and plates will be made with as much care and skill as our patterns and flasks, and more study and attention will be devoted to this part of our business. The handling of molding sand has always been a laborious and expensive item in foundry work. Twenty-five to thirty cents an hour is high wages to pay for shoveling sand, yet thousands of molders are doing it daily, and at the expense of decreased production. Conveyors can be arranged to carry the sand overhead, which process will temper it, where it will be within easy reach of the molders by movable hoppers. Such practice is now used on our molding machines, and is adequate to all classes of work where large quantities of sand are handled. Only those conversant with the business in a practical way realize how much time and labor is consumed in this manner. Suppose a molder is making work that is plain. Shoveling and ramming are nine-tenths of the work, and by such rigging he fills his flask in an instant without labor. Or suppose his flask is 6 feet square and takes a couple of yards to fill it, and this can be done in a minute, what will be the result in time saved?

Facilities for handling work are probably as far behind the times as anything else. Cranes are too few and far between, often too light for heavy work, and nearly always expected to accommodate more floors than they are capable of serving. Any casting a molder can make on a side floor is made there, and the labor of handling is put on the men. Our light work is not given proper facilities for handling.

Compressed air and the overhead trolley system are becoming mighty factors in our foundry practice, and are especially adapted for the work. Air machines and hoists are rapidly gaining in favor, and their advent in shops that pretend to compete is but a question of time. The overhead trolley system with air hoists for handling flasks, iron and castings will follow soon. The flask yard, core room, cleaning room, molding room, and all places in which lifting power is necessary should be fitted with this arrangement, and the heavy labor of to-day made rapid and easy. Molders or any other men around a plant will gladly do more work if the heavy labor is taken off from them. There is no possible limit in sight to the utility of these improvements. No matter if it is possible for men to handle certain flasks or castings, carry and pour their iron by hand, a reduction in heavy labor means an increase in production. Another advantage of this system is that every molder can be supplied with a trolley and hoist at a low cost, and he can have his own individual crane. How much time is lost in foundries waiting for the cranes and changing hoisting apparatus, no one but the initiated know.

Stand in the door of a shop and watch the time it takes for the men to get a lift when five or six hands are required. Note how many minutes of each man's time is lost, and multiply the same by the possible number of lifts required in a day; the result will be astonishing. Watch one man lower his cope on horse ten minutes before he is ready to close, in order to keep some other molder from waiting at the crane, then having to change and adjust his slings or beam all over again, and possibly wait himself a few minutes. This is a faithful picture of many shops.

When we have air pressure it will be attended with many economical developments. Our iron and fuel can be raised to the scaffold with it, elevators run and numberless other labor-saving devices made possible.

In cupola practice there will be a decided reformation. The greater number of our shops to-day melt at an average ratio of fuel to iron of 1 to 7 up to 1 to 9, occasionally 1 to 10, and in rare cases 1 to 13. Our loss in this direction is enormous. We know the heat lost by radiation and passing up the stack is more than sufficient to melt the iron charged; we also know that we do not get the service or speed from our cupolas that is possible. The form of our cupolas and tuyere arrangements must be altered to reduce the immense amount of fuel used in bedding and means adopted to overcome loss through the stack. One in 20 may seem an ideal of economical melting, but I am confident that it will be accomplished in a few years. The heat is there; the problem is to utilize it. Dull iron, bunged cupolas and late heats will be rare occurrences, and our practice reduced to a scientific basis.

I do not assume in the foregoing that any of these things will be executed in the exact details I have mentioned any further than at present. But future developments must embrace the items that are most expensive and laborious in our business, and from my observation they are as already shown. Authorities to refer to, divisions of classes of work, improved machines, better rigging for making cores, and facilities for handling sand and everything that requires lifting power—these are all items on which it appears much labor is wasted and on which our future has abundant room for progress. I might name numerous other details in flasks and other rigging that require and will receive improvement, but their growth will be sure and keep pace with other parts of the business.

A telegram from Hamilton, Ont., says that Louis Edworthy, a patternmaker, after eighteen or twenty years of experimenting, has completed a machine that will throw 90 per cent of the molders of the country out of work. One machine run by a twenty-horse power engine and twenty men to pour in, will do the work of 200 molders.

Just think of getting a machine that could do the work of 200 molders. Whew! Now if someone would only invent a machine to furnish the work. Next!!!

James Chalmers.

The Unvarnished History of a Common Man.

By W. EDWARD.

CHAPTER XVII.

I did not stay long in Marshall after I was laid off, as I had an idea that my name was "Dennis" in that part of the country from there forward, and as soon as I got my money I struck out for Dallas and Ft. Worth, where I had heard that work was plenty. I didn't find it very good in Dallas, though, as I made a tour of the shops without getting any show for a job, and, after buying a twenty-five-cent handkerchief in order to get a look at the notorious Frank James, who was at that time clerking in a large dry goods store in Dallas, I wended my way toward the depot to see what time I could catch a train for Ft. Worth. On the way to the station I stopped to examine a patent churn which a man was selling on the street corner and got into a conversation with him. I found that he was selling county rights for the sale of the churn, and that Tarrant County, of which Ft. Worth is the county seat, was for sale. There were dozens of people around the churn all the time, and he appeared to be doing a land-office business, but from my experience afterward I guess it consisted only in answering questions. Here, I thought, was a chance for me to quit "hoboing" and get into a nice clean business where I was sure of making a living, with a possibility of making more than I could hope to earn in the foundry. I walked on studying over the matter, and, finding I had several hours to wait for a train, I came back again and allowed him to convince me that there was an opportunity for me to make a fortune in selling this churn. Inside of half an hour I had bargained for the right of Tarrant County for $100, paying $25 down and giving my notes for the balance.

As soon as I got to Ft. Worth I ordered a sample churn from the factory, but as it would be a week before the sample would reach me I concluded to strike "Jack" Walsh at the Ft. Worth Foundry for a job. "Jack" was a strong union man, and while he needed a moulder, he wanted to be sure that I had a card before he hired me, so when I "struck" him for a job he told me to wait until he went up to the pattern shop to see if there were any patterns ready; this gave "Jack" Quinn, the secretary, a chance to find out where I was from and if I had my "ticket" with me. I told him I had just come from Marshall and showed him my card and then went over to talk to Luke Cunningham, whom I had met at the "Rock." When Walsh came back I noticed Quinn give him the sign that I was all right, so he told me to come out in the morning. The next morning I forgot my card, and when the shop committee "braced" me for it I remembered that I had left it in my other clothes, and explained the matter to him, saying I had shown it to Quinn the day before and that I would bring it down at noon. He said that didn't go with him, the rule in that shop was "no card, no work," and I would have to produce my card before I put a shovel in the sand. I called Quinn over and asked if he wasn't satisfied that I had a card? He said that he knew I had a card, but didn't know but that it was a year old as he had not noticed the date, and thought the best thing I could do would be to loose a half day and get it. This made me mad and I swore I was going to work that morning without my card even if they struck the shop on me, unless the "boss" fired me. All the men gathered around to know what the trouble was about and the shop committee told them I had failed to produce a card and asked what they proposed to do about it? Just then Walsh came in, and, seeing the men clustered around my floor, came over and asked what the row was about? Some of them said I had no card, and I explained to him that I had simply forgotten it that morning and did not feel like loosing a half day to get it. Turning to Quinn, he said: "Didn't you say you saw his card yesterday?" Quinn admitted that he had. "Well," said Walsh, "if you fellows don't settle this thing in five minutes and get to work I'll fire the whole gang." I kept on cutting up my sand and the men concluded to give me until noon to produce my card.

Walsh had a wonderfully intelligent little dog by the name of Dixie, who seemed to recognize a moulder by instinct, or maybe it was the smell of core smoke on their clothes.

at any rate he seemed to have a contempt for good clothes and the rockier the "hobo" looked the closer Dixie stuck to him. He was the first in the shop every morning, and would walk around to see that every moulder was in the shop until the whistle blew for seven o'clock. If any of the boys were off, as soon as the whistle blew Dixie would be off like a shot to hunt them up and spend the day with them, and if any of them were off on a carousal Dixie would stay with them night and day, except to report at the shop every morning, until they sobered up and came back to work. He had a number of tricks which he would perform at the request of any of the moulders, but if anyone else spoke to him he was apparently as deaf as a post and paid no attention to them.

I worked in the shop for a week after my sample came in order to get a "stake," so I should not be froze out too soon if my sales did not pan out well on the start, but I was anxious to get at it, as I was sure of making the business a success. On Saturday I quit the shop and on Monday, after making arrangements with a grocery man to stand in front of his store through the day and store my sample with him at night, I started in earnest to sell my churn. For the first week or two, so long as the novelty lasted, I was kept busy answering questions and showing the workings of the churn, feeling sure each day that I would land some orders the next, but every man whom I approached for an order had the same tale of woe—the crops had been failures for two years and they had no money—until I gave up in disgust. I stuck to it for three weeks and did my best to convince every farmer who passed that my churn was just what he wanted, but finding that I could convince no one of this fact I concluded to sell my sample and quit the business. This, however, was easier thought than done. I offered the sample first at cost price, but getting no buyers I put it down to half what it cost me, still finding no buyers I walked off one morning and left it standing on the street and, so far as I know, it may be still standing there.

After my failure with the churn I did not care to go back to the shop, where I was sure all the boys would guy me, and, as I was nearly broke, I concluded to take to the road again. When my mind is once made up to do anything I never hesitate, and the same night that I came to the conclusion that I was a failure as a business man I was stowed away in an empty boxcar bound for Sherman. I arrived there the next afternoon and found a good sized house shop, with ten or twelve moulders working, and a small agricultural shop with two men in it. Both shops were full and there was no show for a job, so I concluded I would have to travel further, and on sizing up my pile I found that I had only a dollar and a half in my pockets. However, I struck "Jack" Robinson, whom I had held up in Springfield for a couple of days, and he invited me to stay over night and "chew" with him. The next morning I walked ten miles to Dennison, where the M. K. & T. shops are located. There were two small shops in Dennison with a couple of moulders in each shop, but no show for a job. In one of the shops I found the "boss" and a helper sledging away at a six-inch round column trying to break it up. It had raised about six inches on the ends and the "boss" wanted to know if I could explain it, as they had lost two that way. I told him I could make the columns all right and turn them out straight, and he had the "nerve" to ask me to stay there a day and show him where the trouble was, after refusing me a job. I told him I would do it for five dollars, but he said the knowledge wasn't worth that, so I started back toward Sherman, intending to strike for Paris. On the way I met a brakeman who had been working on the "Katyy," and for some reason was anxious to get away from Dennison. He had started on his run and had a well-filled lunch basket, which he still carried in his hand, and after walking a few miles I suggested that we sample the lunch. He agreed to this and we sat down alongside the road and finished the contents of the basket. After walking a mile or two further he changed his mind about running away from Dennison and concluded to go back, so I walked on and left him. I had got to within three miles of Sherman when the sky suddenly clouded over and it commenced to rain. Seeing a schoolhouse about a hundred yards from the railroad I ran to it for shelter. The door being unlocked I entered and amused myself for some time working sums on the blackboard, thinking

the rain would soon let up. As it began to grow dark, however, and there was no signs of the rain stopping I thought I might as well camp in the schoolhouse as anywhere else. There were ten windows in the school and each of them was hung with a blue calico curtain, and in looking around for something to make a comfortable resting place I noticed them, so I took them all down and, rolling up three or four for a pillow, I used the rest for a cover, and stretched myself on a bench for the night. I was back in Sherman before six o'clock the next morning, having left the schoolhouse as soon as it was light, and was in time for breakfast at the house where all of the "hobos" put up.

I never like to hang around a place where there is no show for work, so as soon as breakfast was over and the boys started for the shop, I went over to the depot to see if there was any show for getting a train on the T. P. for Paris. Just as I got to the crossing the east bound local on the Cotton Belt pulled in and commenced to do some switching. The agent at the depot told me there would be no trains east on the T. P. until late that afternoon, so I watched my chance and climbed into a box car on the Cotton Belt; it would carry me away from Sherman at least and I was not particular where I went so long as I saw a chance for a job. Luck seemed to be against me this trip, however, as one of the "brakies" discovered me before we had made ten miles, and the conductor stopped the train and put me off. There was no use going back to Sherman, so I trudged on in hopes of striking another train. I walked until late at night before I found a place to stretch my weary limbs in an old barn, and I was up and at it at daylight the next morning. Two trains passed me, but it was no use trying to catch them between stations, so I kept tramping on all of the second day. About six o'clock in the evening I struck a station where a lot of men were digging gravel for filling along the road, and just as I reached the place the pay car pulled out, after paying the men two months' wages. There was nothing but a few tents where the navies slept and the commissary cars, and on inquiring of one of the men I found that it was only six miles to Wolf City, where the Santa Fe crosses the Cotton Belt, so I concluded to walk on. It began to grow dark very rapidly, as a storm was coming up, and before I had made half of the distance it was so dark that I could hardly see my hand before me. The air was heavy and oppressive, and not a sound was heard except the clatter of my shoes on the ties, as I walked along, and the hoarse croak of the frogs. On rounding a bend in the road I came in sight of the electric lights of the town, which is built on a hill, but they only served to make the darkness more intense as the light shone directly in my eyes. Just as I was crossing a little tresle I heard the ominous click, click of a gun, and straining my eyes to see where the sound came from, I saw a dark shadow to my left as if of a pile of ties. I walked on, however, without any suspicion of danger, and, as I came opposite the dark object, a man hailed me and asked where I had come from and where I was going? I replied that I had come from Sherman and was making for Wolf City. He asked me a number of questions about the foreman of the camp which I had passed and the number of men working there, to all of which I could give no reply except that I did not know. Finally he mentioned the fact of the pay car having passed through that afternoon and in an instant it flashed through my mind what his object was in halting me. Knowing that none of the men had been paid anything for two months he calculated that some of them would walk up to Wolf City that night to "blow" in some of their money at the saloons, and to carry a bottle back with them, as it was Saturday evening, and he was lying here to relieve them of their hard earned wealth. The idea of his waylaying me—a tramp, with less than a dollar in my clothes—struck me as so ridiculous that I laughed loud and heartily. He wanted to know what I was making all the row about and I told him as well as I could for laughing. "Well," said he, "you're the coolest customer I ever met." And, as I kept on laughing, he ordered me to shut my head and move on lively or he would blow my — — — brains out. I moved on at a pretty lively gait, without waiting for a second invitation, chuckling to myself at the way he had been fooled, but when I learned the next morning that two of the navies had

been found shot through the head and their pockets turned inside out at the same place I wondered what I had to laugh about. Before I reached the town it began to rain, but I was lucky e nough to find a box car on the siding back of the depot with a lot of straw in it and, as I was thoroughly tired out, having walked steadily all day, after turning the grain door so as to shelter me from the wind, I curled up behind it on a bundle of straw and slept soundly until morning.

Befor eleaving Ft. Worth I had packed my satchel and shipped it by express to a friend in Marchall and had donned my working clothes for the road. I had with me a razor, a comb, a piece of coap and three handkerchiefs, so that I was able to keep myself looking presentable. In the morning I went down to a little branch where I washed, combed the straw out of my hair and shaved myself as well as I could without the aid of a glass, then I started to hun something to eat. As I walked up toward the depot I noticed a crowd on the platform and went over to see what the excitement was about. When I got over they were just lifting the bodies of two men, who had been found dead at the place where I had been held up, from a handcar into the depot and it made me sick to think how near I had come to meeting the same fate. As a stranger in the town, who might be suspected of complicity in the murder and robbery, I thought it was better for me to tell what I knew of the matter before the suspicion of any one was aroused by my appearance, as I could see by the temper of the crowd that if their suspicion of any one became very strong they would not wait for judge or jury to deal out justice. Just then the town marshal came down and as soon as I could, without attracting too much attention, I took him to one side and told him how I had been held up at the same place and, I supposed, by the same man who had killed these two men. After hearing my story the marshal decided to hold me for the inquest, which was to be held at once, the coroner having arrived. I told my story at the inquest which was corroborated, so far as my statement of the time I had left the camp and when I had arrived at the depot, by two men who had seen and spoken to me at the camp and by the night operator who had seen me on the platform of the depot. The evidence proved that the two men had not left the camp until after seven o'clock and the night operator had seen me looking in the window at half past seven, so the coroner decided to release me. By the time the inquest was over and I was given my liberty it was nearly noon and, as I had eaten nothing since noon the day before, I began to feel a gnawing sensation in my stomach, which could only be appeased by a square meal, so I hunted up a boarding house and paid a quarter for a dinner, which left me the modest sum of thirty cents in my exchecquer.

(Continued.)

Sackville, N. B., Jan. 19, 1895.

The Foundry Publishing Co., Detroit, Mich.:

Gentlemen—Inclosed find one dollar in payment of my subscription for THE FOUNDRY for 1895, and in renewing allow me to say that I am greatly pleased with the improvements that you make from time to time. Without doubt, THE FOUNDRY stands ahead of all competitors in foundry literature at the present day, and no one engaged in the foundry business of any kind can afford to be without it. Wishing you every success in the future, I remain,

Yours truly, J. M. MacMEEKIN,
Sackville, N. B.

The Ellwood Iron Works at Ellwood, Ind., are fairly busy, while the same is reported concerning the Kerr-Murray Manufacturing Co. and Bass foundry at Fort Wayne, the Roots Blower Co. at Connorsville, Gaar, Scott & Co., Hossier Drill Co. and Robinson & Co. at Richmond, and the Noblesville Foundry at Noblesville, Ind.

The Brazil Foundry & Machine Co., Brazil, Ind., are working a full force full time. For two years back they have only worked half time or less.

At Lansing, Mich., the firm of E. Bement & Sons state that January was the best month they ever had. Their sales were $15,000 in excess of the previous January, and they received and shipped 143 car-loads of goods. They have a good trade in several foreign countries, such as France, Venezuela, Cape Town, South Africa, Smyrna, Asiatic Africa, Isle of San Domingo, Egypt, Copenhagen, Denmark, etc.